

The IRON AGE

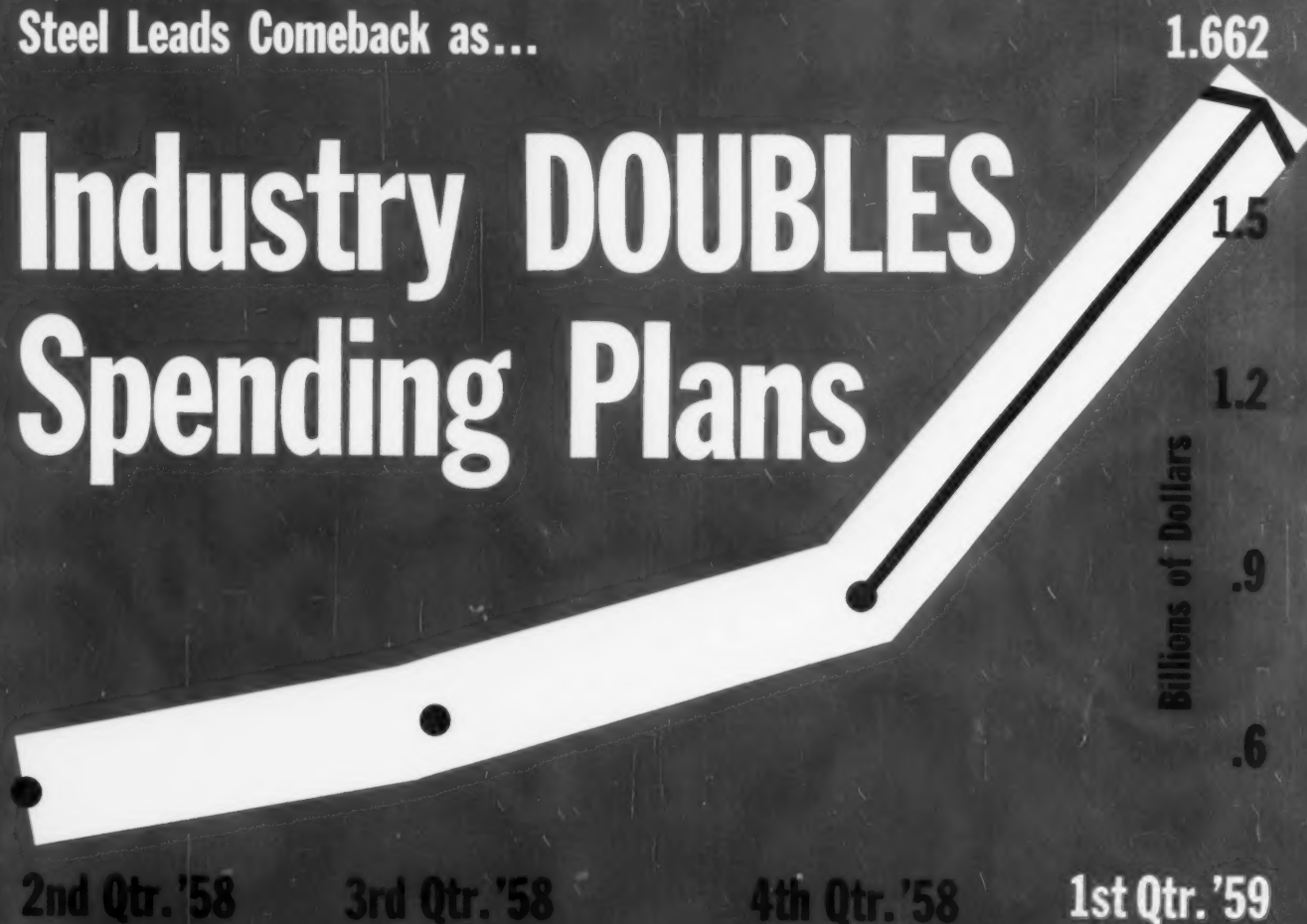
June 18, 1959

A Chilton Publication

The National Metalworking Weekly

Steel Leads Comeback as...

Industry DOUBLES Spending Plans



A Special Report on Metalworking Capital Appropriations—P. 65

How Steel Labor Pattern

Hits Fabricators

— P. 53

Working Vulcanized Fiber P. 97

Digest of the Week

— P. 2-3



Photograph courtesy Ohio Seamless Tube Division of Copperweld Steel Company

Aristoloy uniform quality steel bars pay off on hot piercing operations

Few manufacturing operations match piercing of tube rounds as a severe test of quality. Rapid displacement of metal and immediate increase in temperature reveal internal defects...magnify the slightest surface imperfections.

Copperweld's precise melting produces a prime ingot of uniform chemistry. Careful conditioning and rolling deliver bars that meet Aristoloy piercing quality specifications. Available in a full range of A.I.S.I. standard analyses.

For complete information about Aristoloy blooms, slabs, billets and bars, in carbon, alloy, stainless and leaded, call Copperweld in your nearest large city, or write for NEW PRODUCTS & FACILITIES CATALOG.



COPPERWELD STEEL COMPANY

ARISTOLOY STEEL DIVISION • 4001 Mahoning Ave., Warren, Ohio • EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N. Y.



Tool Steel Topics



On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor:
Bethlehem Steel Export Corporation



Lehigh H makes deep draw... passes test with flying colors

It takes a deep draw to form these cone-shaped lamp shades from .025 in. steel sheet at Keystone Lamp Manufacturing Co., Slatington, Pa. The forming die frequently gave trouble, causing production to bog down.

The lamp maker contacted Luria Steel Supply Co., a distributor of Bethlehem tool steel. "We know the job is difficult," they said, "but perhaps you can tell us about a tool steel that will withstand such a deep draw."

The Luria representative had seen such problems before. "I'd recommend Lehigh H," he told them. "I've seen it handle plenty of tough applications. It has all the stamina you need for this job, and then some."

The Lehigh H die, hardened to Rockwell C60, performed just as he said it would. It had high surface hardness to prevent pickup and galling. Because of its high wear-resistance, it averaged 200,000 shades, a substantial increase. Only .010 in. had to be removed when redressing was necessary.

Lehigh H (AISI D-2) is our standard high-carbon, high-chromium grade of air-hardening tool steel. It is a deep-hardening grade with high compressive strength. It has high wear-resistance, plenty of toughness, and minimum size change during heat-treatment — the characteristics you need most for maximum production.

TYPICAL ANALYSIS

Carbon 1.55	Chromium 11.50	Molybdenum 0.80
Manganese 0.40	Vanadium 0.90	

The best way to appreciate the advantages of Lehigh H is to put it to work. A trial run in your shop can be arranged by your local Bethlehem tool steel distributor.



BETHLEHEM TOOL STEEL ENGINEER SAYS:



You Can Remedy Fatigue-Failures

Chisels and other tools which are subjected to repeated stresses often fail suddenly. Because these tools are made from shock-resisting steel, the sudden failures can appear mysterious. However, close inspection of the failed parts often reveals that the failures were not sudden at all. They occurred because a crack progressed part way through the section, followed by sudden fracture of the remaining section.

Fatigue-fractures have a characteristic, smooth-rubbed surface where the initial crack opened up, plus an inner crystalline zone revealed by the final sudden break. Often the smooth-rubbed surface shows parallel "oyster-shell" markings, and sometimes, evidence of rusting.

As a rule, fatigue-failures begin at a stress-concentration point, such as a notch, a poor fillet, tool mark, accidental nick, or deep stamping. The proper cure is to correct such design or mechanical faults promptly.



USE UPSET-FORGED DISCS FOR ALUMINUM EXTRUSIONS TOOLING

Bethlehem produces a full line of upset-forged discs for the manufacture of dies for aluminum extrusions. The discs are forged by expert hammer crews. They are finished in ring dies to insure good section. You can choose from two grades of tool steel—Cromo-WV, chrome-molytungsten-vanadium (H-12), and Cromo-High V, chrome-moly-high vanadium (H-13). Each grade has good resistance to erosion and heat-checking.

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

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The IRON AGE

June 18, 1959—Vol. 183, No. 25

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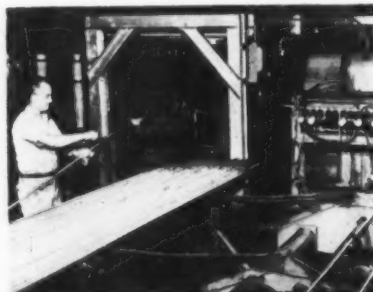
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STEEL LABOR PATTERN

It Hurts Fabricators—Small metal users wish they could get out from under costly concessions based



on basic steel contracts. But there's little hope that things will be any different this year. P. 53

SMALL CAR INFLUENCE

Downgrading Begins—The low-priced three and many medium-priced automakers will begin downgrading in 1960 as consumer preference swings to economy features. The small car impact is being felt. P. 75

HASSLE OVER DEFENSE

New Plan Criticized—It looks like Defense Chief McElroy will have tough going when he takes his air defense plan to Congress for approval. Critics say it is too vulnerable to missiles. P. 79

TURBINES FOR AUTOS?

Nearer Than You Think—Boeing Airplane Co. has developed a light-

Metalworking



weight gas turbine that generates 300 hp. Its size, weight, and potential cost make it a good bet for tomorrow's cars. P. 81

NUMERICAL CONTROLS

For Job Lots—General Electric has installed a numerical controls system at its large steam turbine generator department. Here's how it is working out. P. 83

FEATURE ARTICLES

VULCANIZED FIBER

How to Machine, Form—Standard metalworking or woodworking equipment will cut and machine vulcanized fiber quite easily. It pays to know how to modify such machinery to increase output and reduce production costs. Higher speed spindle drives can often be put to use. P. 97

FORGER SIZES JET PARTS

With Fast, Simple Cycle—Two design features of a new forger and upsetter make for increased production efficiency. One is the horizontal die arrangement and the other is accessibility of the working areas from three sides to simplify handling. P. 101

STAINLESS IN NUCLEAR USE

Debate Over Cobalt—A reader comments on a recent technical article on low-cobalt stainless. It's a healthy debate that points up the need for standards in nuclear use.

The author replies with specific comments on how to select cobalt limits. P. 103

AUTOMATE CONVEYORS

With Mechanized Handling—Even with conveyor systems already in use, it's often possible to completely mechanize the setup with a few simple handling devices. P. 104

STANDARD LATHE

Takes Heavy Jobs—A rugged saddle-type turret lathe is handling problem parts as well as standard work with top efficiency. It has the power, rigidity, and versatility to cut time from the toughest jobs. P. 107

MARKETS & PRICES

CANMAKERS EXPECT RECORD

Production, That Is—There's a good chance tin can output may hit a new high in 1959. But will it mean record profits for the commercial can industry? P. 56

NEXT WEEK

TECHNICAL PROGRESS

Road to Growth—Automation has had more than its share of critics lately, particularly in view of the current unemployment-productivity debate. Next week machine tool authority Ralph Cross states the case for technical progress.

SPENDING PLANS: Metalworking has sharply increased its appropriations for plant and equipment spending. This latest quarterly report shows where the money will go, industry by industry. P. 65

MATERIALS HANDLING

Boom Develops—Lift truck builders are being rushed as many plants place orders they held back last year. It looks like a 15 pct better year overall. P. 57

REPORT TO MANAGEMENT

Sales vs Inventories—Most companies have been trying to build up their stocks ahead of a probable steel strike. But the sales rate has also improved. As a result, ratio of sales to stocks is much better than at this time last year. P. 63

THIRD QUARTER ORDERS

Will They Pan Out?—Steel mills have some misgivings about the orders they are receiving for third quarter delivery. P. 147

PUMP BUYERS

Market Getting Tighter—The pump industry was as hard hit by the recession as most other industries. But it is a trifle slower snapping back. There are advantages to buying pumps now. P. 148





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A brass rod that out-performs any other off-the-shelf free cutting rod!

Your biggest problem with Free-Cutting Brass has always been lack of uniformity. And Chase® did something about it—with new Chase 3-MARK Free-Cutting Rod (ASTM B-16).

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Close control of chamfer—If collets slip off the rod end, they climb back easily. Rod doesn't jam against the stop, to cause smash-ups and costly down time.

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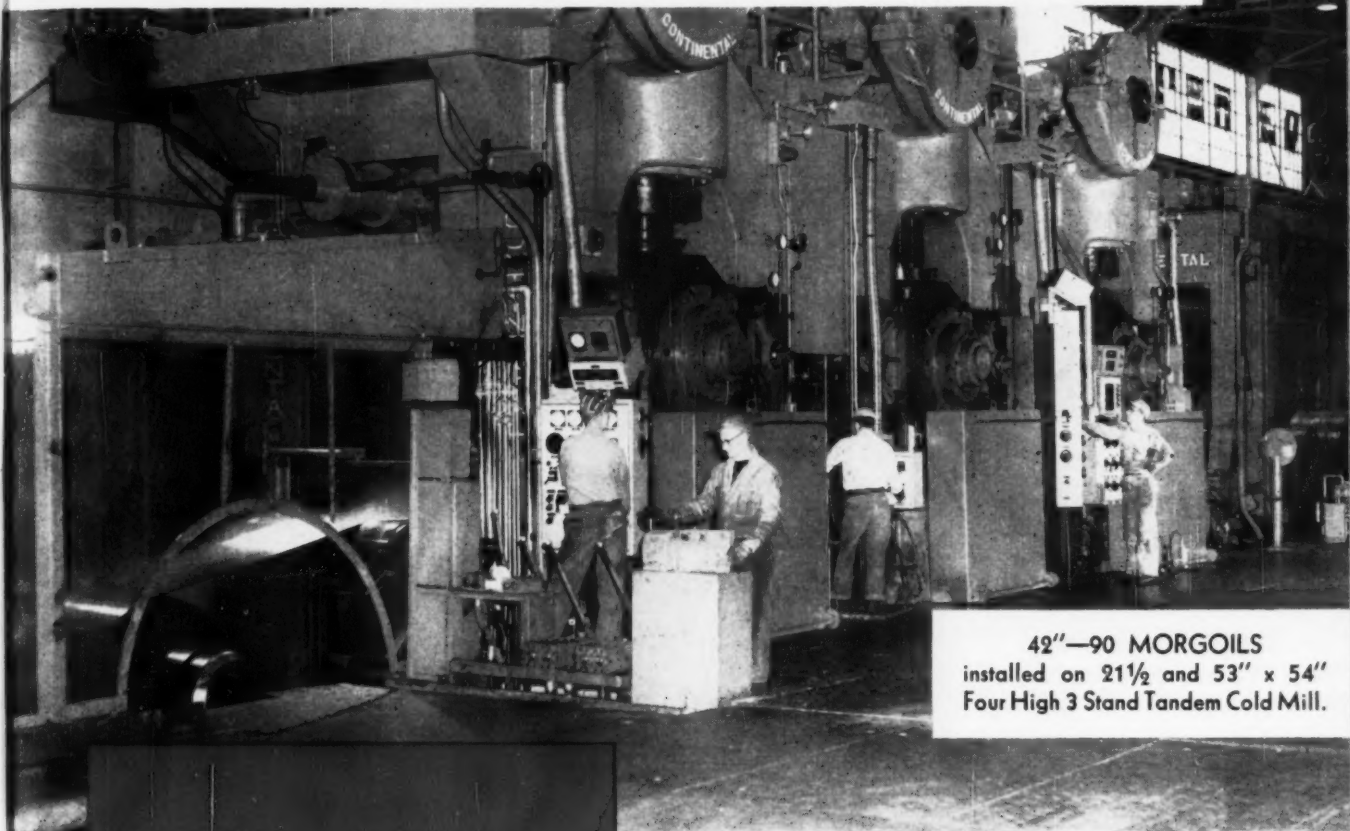
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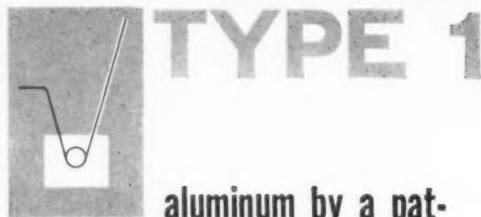
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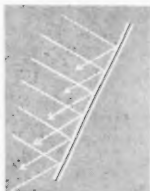
1959

ARMCO ALUMINIZED STEEL



TYPE 1

Sturdy steel coated with aluminum by a patented hot-dip process. No metal of comparable price can match ALUMINIZED STEEL Type 1 in resistance to destructive combinations of heat and corrosion.



The surface of this aluminum-coated steel reflects up to 80 per cent of radiant heat. It's used to "save" heat (hold it in) or to direct heat where it's wanted.

ALUMINIZED STEEL will withstand moderate forming, drawing or spinning operations without flaking or peeling of the coating. Costs stay low because ALUMINIZED STEEL needs no further finishing after fabrication. Twenty years' experience by hundreds of manufacturers shows that products and parts made of ALUMINIZED STEEL mean service savings too—through longer life, more efficient operation.

For information about this aluminum-coated steel originated by Armco, write:
Armco Steel Corporation, 2469 Curtis
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New steels are
born at
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ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Lost Leadership

It Could Happen to Us

As a nation we are not as big as we like to think we are. There are many serious reasons for this. If we as a people don't soon do something about it, we can become a second rate nation.

With foreign aid, we have built up nations which are now competing with us. So much so that our exports are dropping rapidly and our imports are increasing by leaps and bounds.

We have the highest wage rates in the world. They keep going higher. This is costing jobs here at home. But more than that, the day will come when many metalworking companies will close up or build plants abroad.

It is in the foreseeable future for machinery makers to establish large-scale plants abroad so they can sell there—and at home here. And who can blame them when business is supposed to be conducted for a profit? We warn of a major trend, not isolated examples.

We worship leisure and abhor hard work. We waste our God-given talents by using them far below our normal "capacity." Yet we want the same return as if we worked our heads off. No one argues that we need to kill ourselves with work. But let's be fair about it—whom do you know of in your whole lifetime who worked himself to death?

Our gold is rushing out of our country. Learned men give us long discourses on why this isn't serious. But the gold keeps moving from our shores. And it will continue to move out as long as we pour billions of foreign aid into countries who no longer need that type of assistance.

Our tendency is to shun anything that requires thought, facing the truth, or that suggests sacrifice. Anyone who takes on deep and lasting responsibility is often called a damned fool—behind his back.

Our nation needs people in Washington. Yet Congressmen harass them so much that few want to run the gamut to get appointed or to serve. Yet we need those who can take all Congress can give them and more. We need a rebirth of service and patriotism affecting those who can, will, and have the stamina to serve their country.

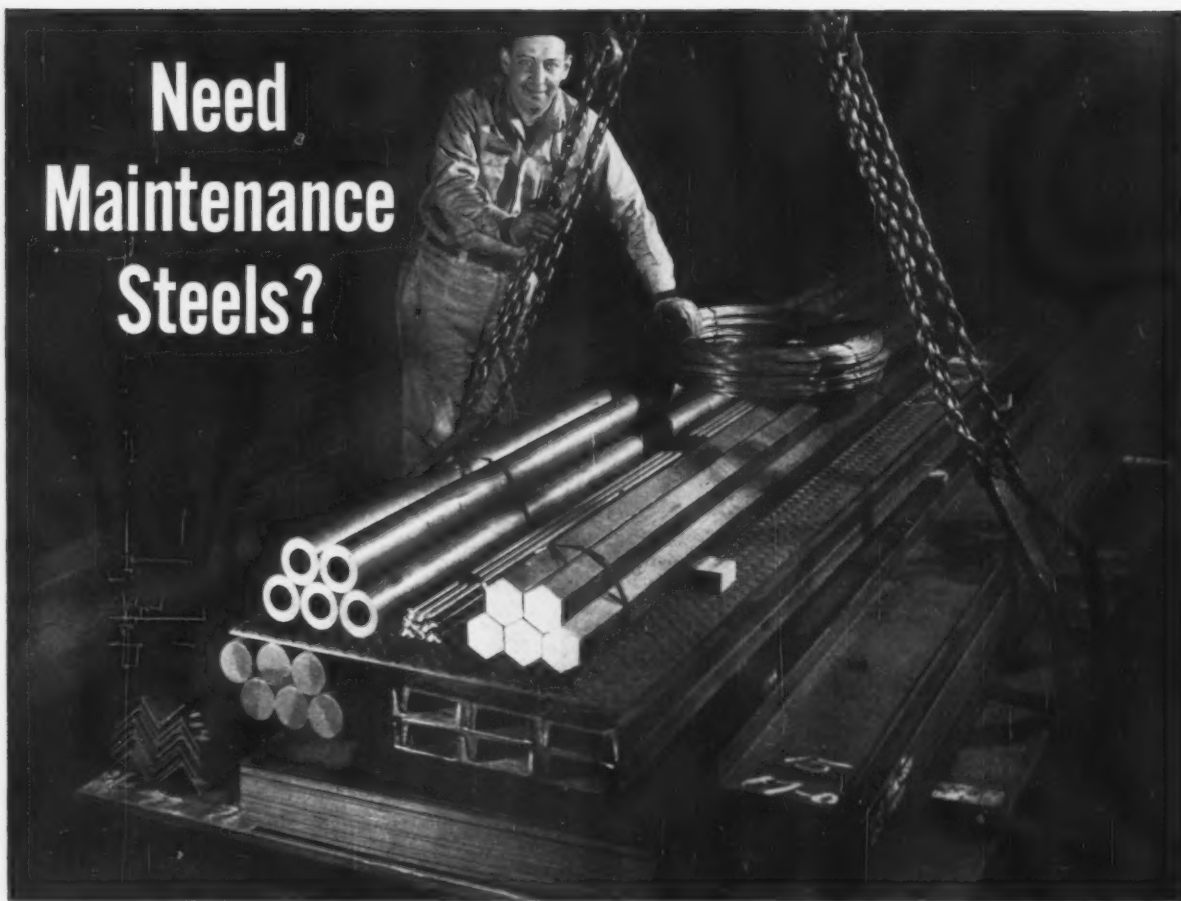
These are but a few of the serious things that tend to make us a candidate for second place in the world of free nations.

Using the words of the late and great John Foster Dulles, it is time to make an agonizing reappraisal—of our real worth to our nation, to others, and to ourselves.

Tom Campbell

Editor-in-Chief

Need Maintenance Steels?



5 Reasons why it pays to buy from Ryerson

MOST DIVERSIFIED STOCKS—Ryerson inventories include by far the widest range of types, shapes and sizes available anywhere.

FAST SERVICE—A combination of varied stocks, modern equipment and an experienced staff means stepped-up processing for *regular requirements* and unparalleled ability to meet the most urgent *emergency needs*.

HIGHEST QUALITY—New quality-control standards, completely detailed and published, govern every aspect of Ryerson specifications and operations. Here is steel that's *certified* for dependable

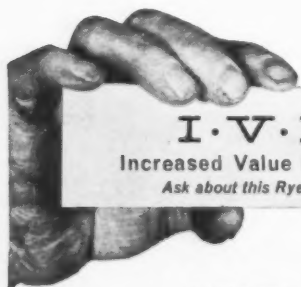
performance, and cut to your most *exacting* requirements.

TECHNICAL HELP—Experienced specialists, well qualified to work with you on problems of replacement and selection, help you achieve optimum value for your steel-buying dollar.

INTEGRITY—The nationally recognized leader in its field, Ryerson values your patronage much too highly to sacrifice your long-term good will for any immediate gain. 117 years of fair dealing—at your service.

LET RYERSON CARRY YOUR INVENTORY

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I.V.B.M.
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Ask about this Ryerson Plan for 1959



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NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

Explains Meteorite Holes

Studies of shock waves produced by nose cone models suggest an answer to the riddle of smooth holes in meteorites. When a nose cone model with an indentation was subjected to hypersonic speed, violent whirlpools of hot gas formed. Cutting like high-speed tools, these hot gases could enlarge pits and gouge out deep, smooth cavities.

Nickel-Base Turbine Wheel

A huge closed-die forged turbine wheel will take temperatures in the range of 1500°-1800°F in jet engines and pumps for liquid-fuel rockets. Made of nickel-base alloy, the wheel has a diameter of 45 in. and weighs fully machined 520 lb.

Japanese Stainless Steel

Japan will soon launch a drive to sell stainless sheet and strip for March 1960 delivery in U. S. A minor factor to date, except in stainless tubing, Japanese are installing new finishing machinery which could alter the current picture. One U. S. answer will be a drive to increase productivity.

Mill to Get Oxygen Setup

Look for an oxygen steelmaking installation to be announced for the Midwest in the near future. Exact timing is uncertain, but engineering contracts have been signed by a major mill.

Nitroparaffins for Fuel

A possible boon for diesel and gasoline engine operation: Studies on use of nitromethane and other nitroparaffins look promising. Initial research suggests fuel could yield twice the power of conventional fuels. Since it supplies some of its own oxygen for combustion, ignition is improved, and cylinder pressure is boosted.

Structural Beryllium Sheet

An advance in materials research has come up with structurally sound beryllium sheet material. Its use in basic airframe structures will solve

many aerodynamic and structural heating problems. Key to bypassing beryllium's brittle tendency is in control of crystal size and orientation during sheet fabrication. One limitation is that forming or bending of the sheet can only take place within a finely defined band of hot forming temperatures.

Boost Solar Furnace Funds?

Strong pitch is made to Congress by the Air Force for more funds for a huge solar furnace. Its towering reflector would produce heat of almost 7500°F. Air Force researchers would test heat effects on metals and other materials. Results will help solve nose-cone re-entry problems. Congress in 1958 voted more than \$4 million for the project. To do the job, the Air Force proposes spending \$6 million more.

More Zinc Diecastings

Improvements in alloys and techniques give zinc diecastings a boost for automotive and other high production applications. Reasons for trend back to zinc are better die life, fewer production troubles, closer tolerances and fewer rejects. Recent chrome plating developments also help.

Control Casting Grain Size

Making use of controlled rate of heat transfer from the mold and a calculated amount of feed, a new method produces castings of high integrity. Parts are essentially stress free with higher than normal physical properties. Method works with high-temperature metals as well as aluminum, magnesium, and steel.

Aluminum Railroad Bearings

A special aluminum-tin alloy is under tests for use in freight-car journal bearings. So far aluminum bearings have withstood severe scuffing tests for many hours longer than present low-cost bearing materials. It may be the answer to what railroaders consider their greatest single maintenance problem—hot-box damage.

Held down "impossible" job for months vs. days

They were asking the "impossible" at this big West Coast mine. The hose used in their big beneficiation plant must be tough enough to handle the flow of murderously abrasive iron-ore slurry. Yet it still must be flexible enough to follow a twisting, bending course down from the top of the seven-story structure.

So it's little wonder their first hose sprang numerous leaks almost immediately — was finished completely in about 45 days. It wasn't until the G.T.M. — Goodyear Technical Man — recommended his special ore-carrying hose that they got satisfactory service.

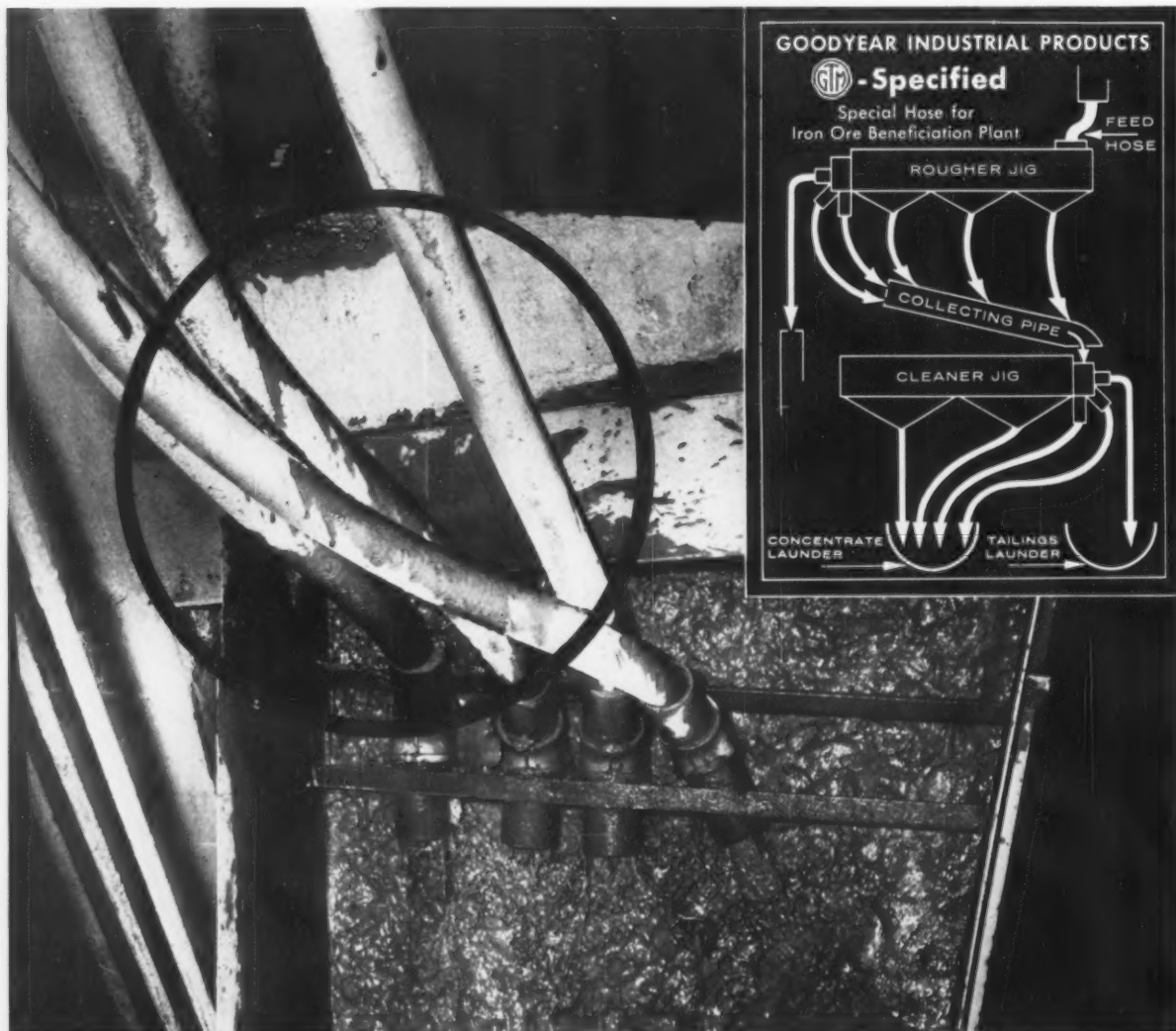
In fact, the G.T.M.'s hose has been so successful that the company's purchased over 4,000 feet of it to date.

It's been on the job over 12 months now — completely mastering this extra-tough job.

So once again, the G.T.M. has proved that the "impossible" often boils down to right hose — and the right recommendation. Make sure you get both — by contacting your Goodyear Distributor — or writing Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS with your Goodyear Distributor. He can give you fast, dependable service on V-Belts, Hose, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."



HOSE FOR ALL INDUSTRY BY

GOODYEAR

THE GREATEST NAME IN RUBBER

FATIGUE CRACKS

Good News: Nothing Makes Us Happier

An editor's job is to report the news, and not worry whether it's good news or bad news. But, being human, our editors get a lot more satisfaction if the news is good.

That's why we take more than the usual pleasure in our fourth survey of metalworking's capital appropriations, P. 65.

Appropriations are up 99 pct from the preceding quarter and up a fat 137 pct from the same quarter a year ago. By all indications, this means a first class spurt in capital goods spending—good news to every metalworker.

Up From the Bottom—This is in sharp contrast to our first survey, which reported capital appropriations for the second quarter of 1958. About the best news we could glean from the dismal results was that the rate of decline was easing. It was the penalty we paid for starting the feature at the bottom of the recession.

Success Story

Food Machinery & Chemical Corp. probably doesn't sound like the name of a defense contractor.

But fact indicates otherwise. The U. S. Army has awarded the company contracts worth \$34 million to build the T113 aluminum personnel carrier.

The news came through just as we selected the T113 in our article (What Mobility Means in Defense, June 4, p. 92) as an example of the changing pattern of defense contracting. (For more about the T113 see last week's West Coast column, p. 113.)

Reasons Why—Food Machinery's success with the T113 emphasizes two points we made in the story:

More defense equipment is manufactured from light metals now that mobility, speed, and light-weight transport are wanted.

Experience in working with these metals can be more important than defense contracting backgrounds.

It Isn't Funny

This leering character was behind a serious quality control problem at Alan Wood Steel Co. Or, more properly stated, on top of a quality control problem.



He was nabbed red-handed. A note from W. E. Boger, Alan Wood's vice president in charge of operations reports, "we now have him pinned down and expect to keep him under control."

How it Happened—In the appropriate language, this caper started when a guide washer hitched a ride on some hot strip, through a finishing stand.

Alan Wood technicians were somewhat extended finding the source of their apparent trouble. But then so was the culprit.

CONTROL

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HOMOGENIZING TO
+ OR - 5° F.



R-S CARHEARTH
FURNACE HANDLES
25 TONS PER DAY

Uniformity hour after hour . . . day after day with a variation of only plus or minus 5°F. That's the record set by an R-S gas fired, double end, carhearth forced convection homogenizing furnace at the Bohn Aluminum & Brass Co. This particular installation is homogenizing a charge of 50,000 lbs. of aluminum billets at a maximum temperature of 1150°F.

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Why not put these savings to work in your plant? Write today for the booklet that points the way to better heat treating. Ask for RS-200. Send your request to . . .

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NORTH WALES, PA.





"Task-Forged" part reduces tractor inventory, sparks sales feature for Minneapolis-Moline

A three-in-one farm tractor that permits quick interchange of three different front wheel assemblies! Minneapolis-Moline came up with this great idea for increasing product salability and reducing inventories—both at the factory and with its dealers.

Key part in the multi-purpose unit was a steering link component. It had to be strong enough to steer and support the front end of the tractor—including the various wheel assemblies—yet light enough for one-man handling. A forging? Of course! Minneapolis-Moline designed it as a drop forging because it had an unusual dovetailed groove in the head and an off-center shaft to boot.

The "Task-Forging" team at COMMERCIAL, working closely with Minneapolis-Moline engineers, proved that

the "idea" steering link component could be better produced as an upset forging on their 6" upsetter—and with many cost-saving advantages to Minneapolis-Moline.

To begin with, the upset forged link saves considerable forged metal. All flash metal is virtually eliminated. Still more forged metal is saved because the upset forging is made from a round bar—involves no forging draft.

The upset forged link lowered machining costs and greatly improved machining conditions. There's less metal to be machined and it's better positioned for easier removal. Furthermore, there's no heavy part line at 180° to cut through. Tool breakage is no problem either because tool speed and feed is constant and continuous.

From an upset forging of 27 lbs. to a finished machined part of 22½ lbs.—there's positive proof of the important savings forging makes possible in both forged metal and machining.

Perhaps you're looking for help in the forming of a new "idea" part. Or, you may be seriously considering an improvement in the forming of an already existing part. In either case, "Task-Forging", COMMERCIAL's new metal forming service may be able to help you. Write to Commercial Shearing & Stamping Company, Dept. K-25, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

LETTERS FROM READERS

Foreign Competition

Sir — Mr. Campbell's editorial (Apr. 30) is indeed very interesting to all concerned in the steel business and the people at large.

Labor, management and the Administration should not overlook foreign competition which warrants full and urgent consideration and by all means, certain sacrifices.

United States steelmakers are no longer factors overseas. Their built-up trade with Latin-American countries is practically lost to European and Japanese producers. In your own domestic market they are making headway, not only on seaboard homes, but inland.

It is not too soon to come down to brass tacks and face the cold facts. The following formula might suit the purpose:

On the outset, earmarked for export a substantial estimated tonnage comprising: pipe, bars, sheets, plates, structural shapes, wire products, tinplate, nails, etc.

Tonnage exported should be tax-exempted, wages and profits reduced accordingly.

Inland and ocean freight rates, special rebates should be allowed.

Meet foreign competition, prices, and terms. (On an even basis, overseas buyers prefer American products. Therefore, feel quite confident of positive results.)—Ramon Rieta, Ave 27-N-3014, Marianao, Cuba.

Request for Aid

Sir—Could you furnish us with details concerning the hardening of pressed mild steel components as commercially used in the manufacture of office stapling machines?

We are aware that manufacturers of these machines successfully harden quite intricate pressings without apparently encountering any difficulty in respect to distortion during the heat treatment.

The technique employed is an inexpensive one which does not make it necessary to re-stamp the pressings for correction after hardening.

We would appreciate any help you can give us in this matter.—E. Newerly, J. J. Berliner & Staff, 684 Broadway, New York 12, N. Y.

■ Perhaps some of our readers could help.—Ed.

Material Handling

Sir—Those at the Westinghouse Plant in Athens, Ga., are very proud of the article "Six-Point Plan for Better Material Handling," which appeared in your May 28 issue.

Would you please send us eight copies of it for our use in the plant.—W. E. Norquist, Supervisor, Quality Control Dept., Athens Works, Westinghouse Electric Corp., Athens, Ga.

■ Reprints have been mailed.

Vendor Ratings

Sir—Kindly send me two reprints of your article "Evaluate Your Vendors to Cut Incoming Inspection Costs" as printed in the May 7 issue.

I have found this story both interesting and informative and hope to incorporate this system in our company in the near future.—E. P. Guenther, Chief Inspector, REF Manufacturing Corp., Mineola, N. Y.

Metal Finishing

Sir—Could we possibly obtain two copies of the special article New Handbook on Metal Finishing from the June 4 issue of The IRON AGE.—D. C. Hosmann, American Brass Co., Waterbury.

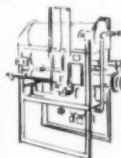
■ It's on the way.—Ed.



WILLIAM C. DIMAN,
Atmosphere Equipment Specialist,
reports...

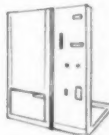
MODERN METALS DEMAND MODERN ATMOSPHERES

Ever since 1927, when Hayes perfected the first controlled-atmosphere furnace, we have made a steady effort to further the technology of protective atmosphere heat treating. By recommending proper atmosphere equipment, we have helped customers increase production, obtain uniform product quality, and save processing time and trouble. Today, our atmosphere generator line, probably the most comprehensive in the business, includes:



Exothermic Generators... for oxidizing or medium-reducing type atmospheres. Standard sizes from 200 CFH to 50,000 CFH.

Endothermic Generators — for reducing and carbon potential atmospheres. Standard sizes from 100 CFH to 20,000 CFH.



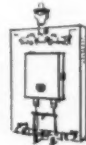
Ammonia Dissociators — for producing hydrogen-nitrogen atmospheres of high purity and low dew point. Standard sizes to 5,000 CFH, or multiples thereof.

Nitrogen Generators — for 99.99% pure inert gas at less than 20¢ per 1,000 cu. ft. Standard sizes from 1,000 CFH to 10,000 CFH.



Forming Gas Generators — for producing controlled ratios of nitrogen and hydrogen from dissociated ammonia. Standard sizes 500 CFH, 1,000 CFH, and larger upon request.

Molecu-Dryer (with LINDE'S Molecular Sieves) — for drying, sweetening, purifying protective atmospheres down to dew points of minus 100° F. Standard sizes from 250 CFH to 6,000 CFH and larger on request.



Hayes offers more than just equipment. Our engineering organization and experimental lab are ready to help make sure you get a "Results Guaranteed" solution to your heat treating or protective atmosphere problem. Write for descriptive bulletins.

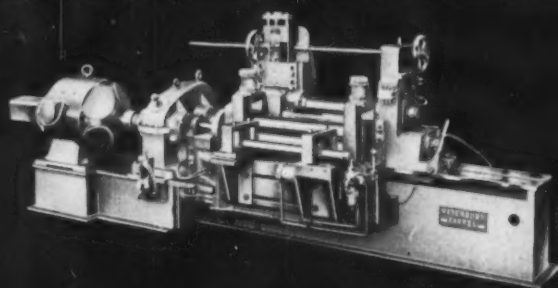
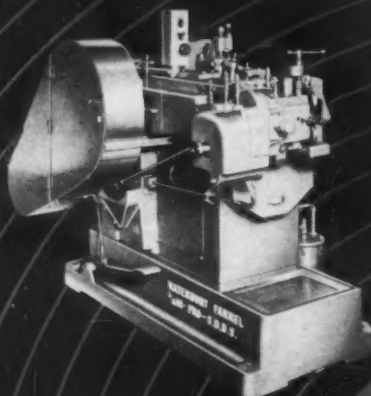
C. I. HAYES, INC.

Established 1905

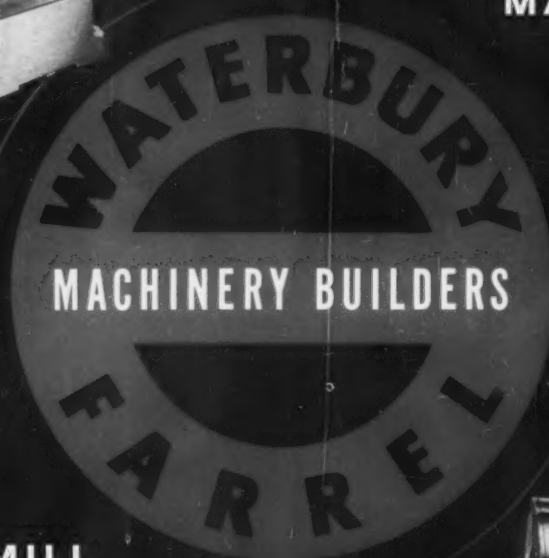
821 WELLINGTON AVE. • CRANSTON 10, R. I.

It pays to see HAYES for metallurgical guidance, laboratory facilities, furnaces, atmosphere generators, gas and fluid dryers.

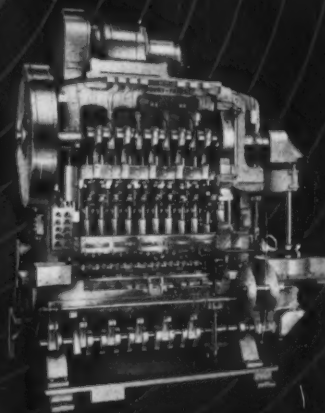
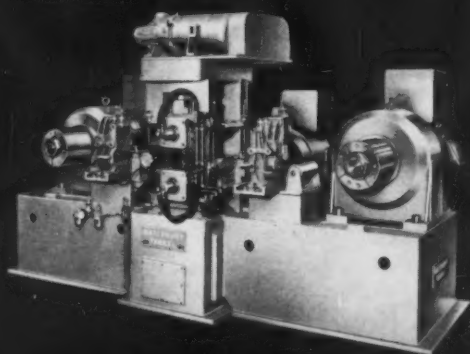
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**POWER
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COMING EXHIBITS

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

JUNE

Alloy Casting Institute — Annual meeting, June 21-23, The Homestead, Hot Springs, Va. Society headquarters, 286 Old Country Rd., Mineola, N. Y.

American Society for Testing Materials — Annual meeting, June 22-26, Chalfonte-Haddon Hall, Atlantic City, N. J. Society headquarters, 1916 Race St., Philadelphia.

Industrial Safety Equipment Assn., Inc. — Annual meeting, June 23-26, Point Clear, Ala. Headquarters, 420 Lexington Ave., New York.

JULY

Truck Trailer Mfrs. Assn. — Annual summer meeting, July 13-15, The Homestead, Hot Springs, Va. Association headquarters, 710 Albee Bldg., Washington, D. C.

Metal Lath Mfrs. Assn. — Meeting, July 21-22, Statler Hotel, Buffalo, N. Y. Association headquarters, Engineers Bldg., Cleveland.

Assn. of Roller & Silent Chain Mfrs. — Summer meeting, July 22-23, Grand Hotel, Mackinac Island, Mich. Association headquarters, 3343 Central Ave., Indianapolis.

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress — Metal mining-industrial minerals conven-

(Continued on P. 16)

NEW FROM KIDDE!



2½-gallon
pressurized water

2½-gallon
anti-freeze (loaded stream)

The easiest-to-operate portable fire extinguishers on the market today!

Here, for the first time, is a practical, sensible design for pressurized water and loaded stream extinguishers. No inverting, no bumping, no valves to turn, no pins to pull (safety lock automatically releases when nozzle removed).

These two new stainless steel Kidde portables feature simple, one-two operation—just aim at fire and push the button. Notice the way the hose is stored, safely out of the way. Notice the wide-open handle—to insure fast action even in gloved hands. Notice the dust-and-waterproof pressure gauges—which show at a glance whether the units are fully charged. All of the features—plus the slim design and light weight of these Kidde portables—make them the easiest-to-store, easiest-to-carry, easiest-to-operate portables on the market today.

Approved by Underwriters' Laboratories. Available in pressurized water for fires in ordinary combustibles, or anti-freeze loaded stream for fires in ordinary combustibles and flammable liquids. For more information, write to Kidde today.

Kidde



Walter Kidde & Company, Inc.
649 Main St., Belleville 9, N. J.

Walter Kidde & Company of Canada Ltd.,
Montreal—Toronto—Vancouver

The words 'Kidde', 'Lux', 'Lux-O-Matic',

'Fyre-Freeez' and the Kidde seal are trademarks of Walter Kidde & Company, Inc.



MAIN SHAFT FOR AUTOMATIC TRANSMISSION is finished fast . . . at low cost on this Osborn Power Brushing setup. In seconds—two brushing heads, using Osborn Economy wire brushes, oscillate back and forth and reverse direction to remove burrs and heat treat scale from splines at each end of the shaft. Brushing job is thorough and efficient to help assure troublefree shaft performance.

IN SECONDS

with **OSBORN**
Power Brushing

What's your production problem—higher volume . . . lower-cost output . . . better quality control? These are only some of the important basic problems you can easily solve—at low investment—with today's Osborn Power Brushing methods.

And you can count on the results—because over 67 years of experience means Osborn can engineer and apply the most efficient power brushing techniques for your specific jobs . . . your special problems.

The first step is an Osborn Brushing Analysis. Here—your Osborn field engineer can single out immediate savings on your operations that involve deburring, cleaning, precision blending—or finishing methods of essentially every description. For details—write *The Osborn Manufacturing Company, Dept. C-85, Cleveland 14, Ohio.*



POWER, PAINT AND MAINTENANCE BRUSHES • BRUSHING METHODS
BRUSHING MACHINES • FOUNDRY PRODUCTION MACHINERY

EXHIBITS, MEETINGS

(Continued from P. 15)

tion, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago, Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel Chicago. Association headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society—National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 5-7, Sherman Hotel Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

Gray Iron Founders' Society, Inc.—Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E. 6th Bldg., Cleveland.

NEWEST OF THE GARLOCK 2,000

First Advance in Cup Design in 30 Years

New Garlock TEFLON-Coated Cups



Cutaway shows how TEFLON coating is applied to outer surface of molded cup by special Garlock process. Coating becomes integral part of outer surface.

This exclusive Garlock development will substantially improve the operation of your hydraulic or pneumatic equipment.

TEFLON-coated cups reduce the breakaway torque required to operate cylinders; reduce running friction; will not stick to cylinder walls even after long periods of idleness. Completely eliminate "squealing." All this, of course, results in longer life, less downtime.

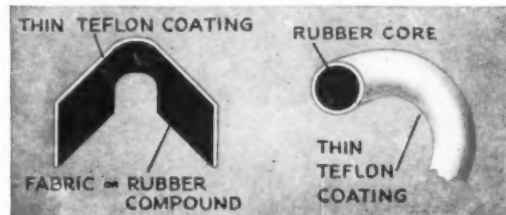
TEFLON, with its low coefficient of friction and anti-sticking characteristics, has for many years resisted the efforts of manufacturers to use it as a coating. The very anti-sticking qualities that make it desirable, also made it difficult to work with. Now Garlock has perfected a technique for coating molded cups with a thin layer of TEFLON. This coating becomes an integral part of the cup.



Most important, of course, TEFLON-coated cups are low in cost, only slightly higher than ordinary cups.

Get full information on this newest member of "the Garlock 2,000" . . . two thousand styles of packings, gaskets, and seals for every need. Call your local Garlock representative or write for Folder 145. You'll find information on other Garlock products in Sweet's Product Design File.

Other New Garlock TEFLON-Coated Products



To reduce friction and reduce downtime at low cost on applications using V-type packings or O-rings Garlock also furnishes TEFLON-coated CHEVRON® packing and TEFLON-coated O-rings. Both have the same exceptional anti-friction qualities of TEFLON-coated cups. These products are available in all the standard sizes. Write for CHEVRON folder AD-115; or O-Ring Folder AD-148.

®Registered Trademark

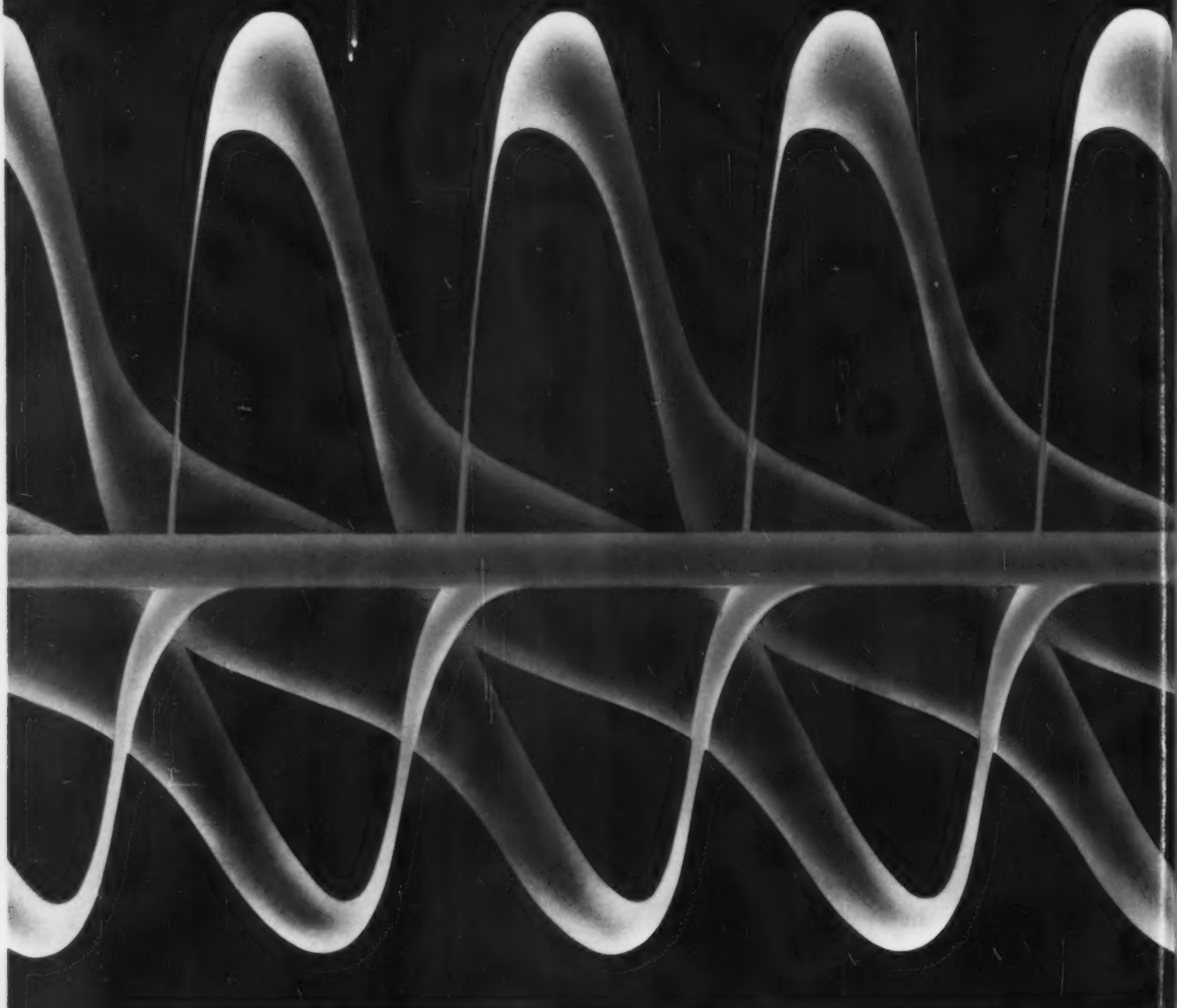
THE GARLOCK PACKING COMPANY, Palmyra, N. Y.

For Prompt Service, contact one of our 30 sales offices and warehouses throughout the U. S. and Canada

GARLOCK

Packings, Gaskets, Oil Seals, Mechanical Seals,
Molded and Extruded Rubber, Plastic Products





The cathode ray oscilloscope is one of science's and industry's most perceptive instruments for determining uniformity of operation. The pattern reproduced here is a harmonically modulated sine wave of exact uniformity.

Uniformity is **Malleable**

Just as the input of an oscilloscope can be controlled to produce repetitive patterns, so can consistently uniform metal parts be produced with Malleable iron because of modern, scientific controls. The unique method by which all Malleable castings are made and the exacting techniques employed by Malleable foundries assure Malleable users of castings that are uniform, part after part, regardless of size or shape. This uniformity, combined with unparalleled physical and

mechanical properties, ideally suits Malleable castings for modern America's quality products.

For information or service, call on one of the progressive firms that identify themselves with this symbol—



If you wish, you may inquire direct to the Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio, for information.

Better Products at Lower Cost Result From Malleable Uniformity Controls

Uniform quality — whether for five or five million pieces — is essential to maintain product quality and increase manufacturing efficiency. With accelerating

frequency, Malleable castings contribute their unique uniformity in critical applications where durable, reliable components are necessary.

Key to Uniformity is Control

Malleable iron is produced under closely controlled manufacturing techniques. From charge composition and molding sand properties, through final inspection,

every critical factor is held constant by using the most modern techniques of metal analysis, process control and inspection.

Internal Uniformity

This versatile engineering material is achieved through converting the base white iron into tough Malleable iron by a controlled heat treating process. Malleable's internal structure exhibits excellent uniformity, an important factor in assuring the dependable performance of intricately designed components.

the foundry — can assure the necessary tolerances and the lowest possible finished part cost. Modern techniques of production and inspection are used to insure top quality, dimensionally accurate castings.

External Uniformity

Fundamental to the casting process is the ability to produce a given shape, time after time, in either small or large quantities. Metal can be placed exactly where it is needed . . . eliminated where it is not. Good design — achieved through close cooperation between the customer and

the foundry — can assure the necessary tolerances and the lowest possible finished part cost. Modern techniques of production and inspection are used to insure top quality, dimensionally accurate castings.



The life of every motorist rides in complete safety on Malleable wheel hubs of unerring uniformity.

Uniformity Proven by Use

The final test of any part is how well it stands up in actual service. Under continuous cyclic and shock loading, the millions of Malleable wheel hubs, which are in service on the front end of every American-made car, have compiled an enviable record of proven uniformity. Another dramatic example of Malleable's uniformity is proved in the old adage "A chain is only as strong as its weakest

link." Miles of Malleable chain, carrying tremendous loads year after year without failure, demonstrate the uniformity of every cast link.

New techniques for controlling every element of Malleable production are the result of intensive research done by Malleable foundries in their continuing search for ways to make Malleable even more versatile and indispensable to industry.

More Information Available

Your copy of *Data Unit 103—Uniformity* — is available from any member of the Malleable Castings Council. If you

prefer, write direct to Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio.

These companies are members of the



CONNECTICUT

Connecticut Mall. Castings Co., New Haven 6
Eastern Malleable Iron Co., Naugatuck
New Haven Malleable Iron Co., New Haven 4

DELAWARE

Eastern Malleable Iron Co., Wilmington 99

ILLINOIS

Central Fdry. Div., Gen. Motors, Danville
Chicago Malleable Castings Co., Chicago 43
Moline Malleable Iron Co., St. Charles
National Mall. and Steel Castings Co., Cicero 50
Peoria Malleable Castings Co., Peoria 1
Wagner Castings Company, Decatur

INDIANA

Link-Belt Company, Indianapolis 6
Muncie Malleable Foundry Co., Muncie
Terre Haute Mall. & Mfg. Corp., Terre Haute

MASSACHUSETTS

Belcher Malleable Iron Co., Easton

MICHIGAN

Albion Malleable Iron Co., Albion
Auto Specialties Mfg. Co., Saint Joseph
Cadillac Malleable Iron Co., Cadillac
Central Fdry. Div., Gen. Motors, Saginaw

MINNESOTA

Northern Malleable Iron Co., St. Paul 6

NEW HAMPSHIRE

Laconia Malleable Iron Co., Laconia

NEW JERSEY

Meeker Foundry Company, Newark 4

NEW YORK

Acme Steel & Mall. Iron Works, Buffalo 7
Frazer & Jones Company Division
Eastern Malleable Iron Co., Solvay
Oriskany Malleable Iron Co., Inc., Oriskany
Westmoreland Mall. Iron Co., Westmoreland

OHIO

American Malleable Castings Co., Marion
Canton Malleable Iron Co., Canton 5
Central Fdry. Div., Gen. Motors, Defiance
Dayton Mall. Iron Co., Ironton Div., Ironton
Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16
Maumee Malleable Castings Co., Toledo 5
National Mall. and Steel Castings Co., Cleveland 6

PENNSYLVANIA

Buck Iron Company, Inc., Philadelphia 22
Erie Malleable Iron Co., Erie
Lancaster Malleable Castings Co., Lancaster
Lehigh Foundries Company, Easton
Meadville Malleable Iron Co., Meadville
Pennsylvania Malleable Iron Corp., Lancaster

TEXAS

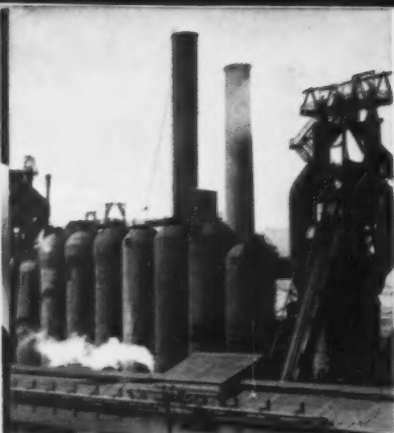
Texas Foundries, Inc., Lufkin

WEST VIRGINIA

West Virginia Mall. Iron Co., Point Pleasant

WISCONSIN

Badger Malleable & Mfg. Co., S. Milwaukee
Belle City Malleable Iron Co., Racine
Chain Belt Company, Milwaukee 1
Federal Malleable Company, West Allis 14
Kirsh Foundry Inc., Beaver Dam
Lakeside Malleable Castings Co., Racine
Milwaukee Malleable & Grey Iron Works, Milwaukee 46



New 400,000-ton capacity blast furnace



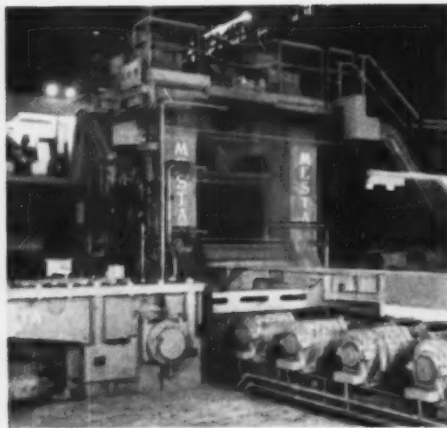
New \$11 million basic oxygen furnace facility



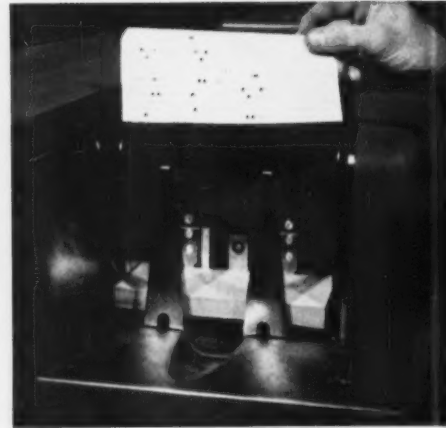
New \$74 million, 11-furnace open hearth shop



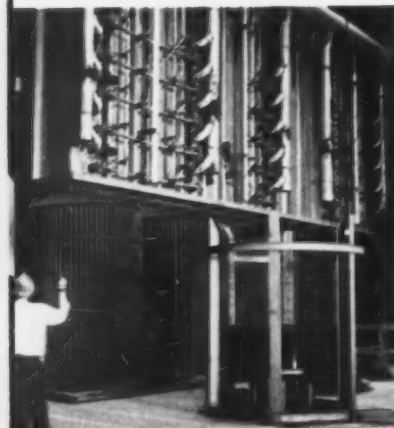
New horizontal scale breaker



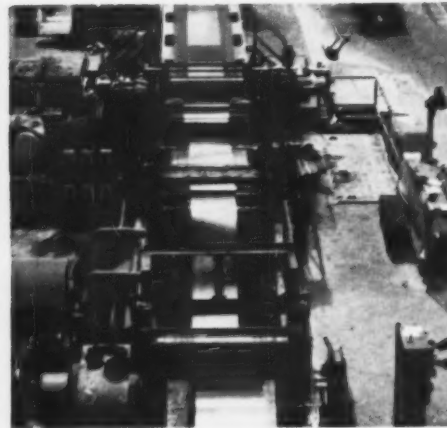
New \$12 million reversing roughing mill



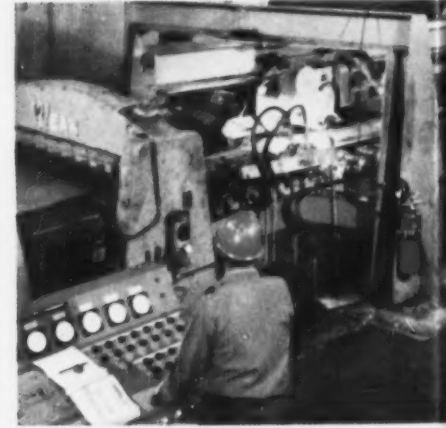
New punch-card controls for quality control



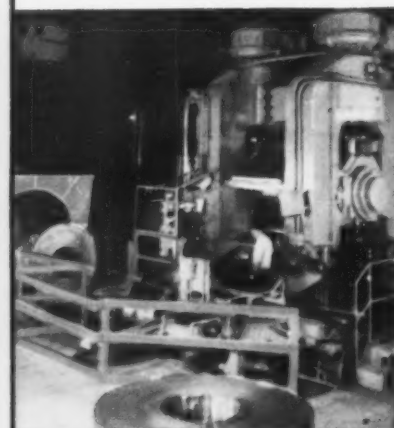
Twenty-five new annealing furnaces



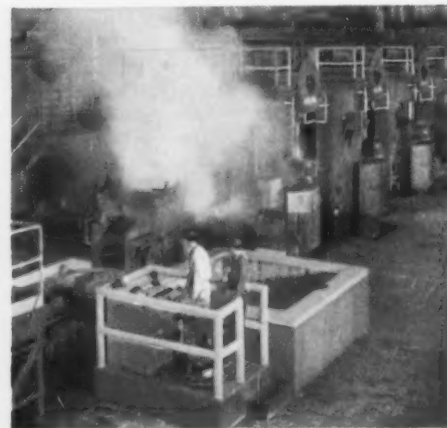
New high-capacity cold shear line



New 3/8-inch high-speed hot shear line



New 56-inch precision temper mill



New \$36 million, 44-inch hot strip mill



Improved 96-inch hot strip mill

shop



New ingot re-heating furnaces in all steel plants

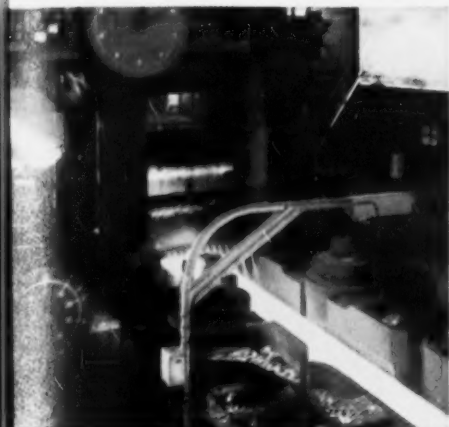


New \$17 million, 68-inch blooming mill

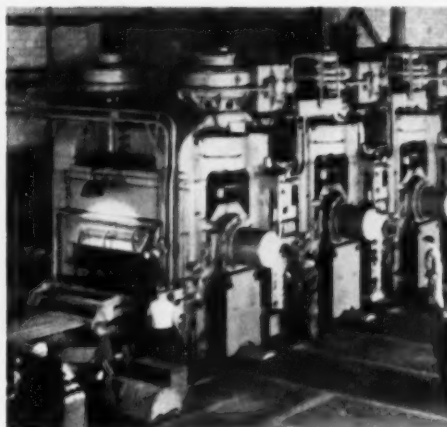


New automatic oxygen scarfer

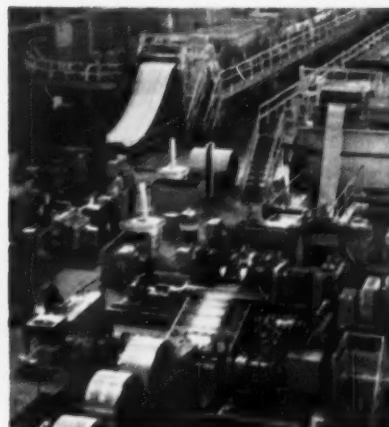
ontrol



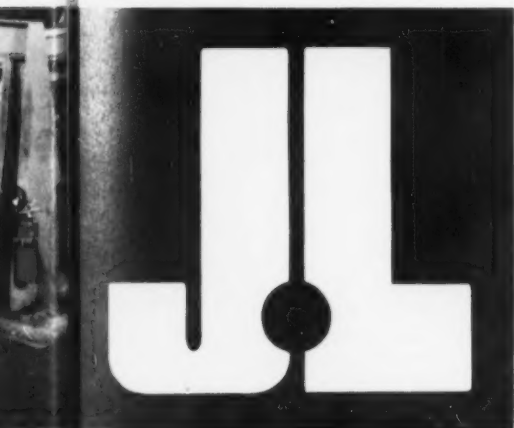
Vertical edgers to assure accurate coil width



World's fastest cold reducing mill of its kind



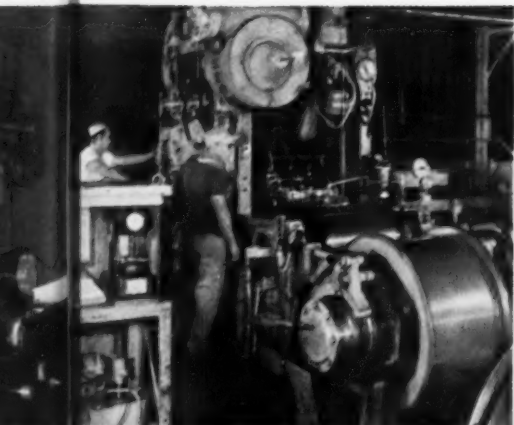
New pickling line handles 60,000-lb. coils



There is a new J&L, which has invested nearly 800 million dollars in new and improved facilities . . . more than twice the company's total value at the end of World War II. This gives us greatly-expanded production capacity, and enables us to be a steady, dependable source of supply for carbon and stainless sheet and strip, and many other products, to present customers and customers we never served before.

Jones & Laughlin Steel Corporation

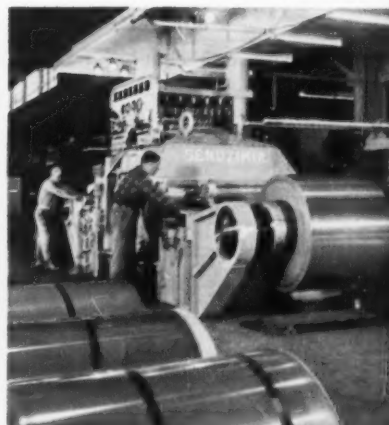
PITTSBURGH, PENNSYLVANIA



Strip steel, a new product for J&L



New \$6¼ million Sendzimir galvanizing line



New \$62 million stainless steel facilities

Name your load and speed combinations

*We'll fit these bearings—or special types and sizes to your special needs.
Just fill in your application problem below—attach to your letterhead and mail.*

THE SCHATZ MANUFACTURING COMPANY, Poughkeepsie, N. Y.

Here's our bearing problem. What do you suggest?

OPERATING CONDITIONS _____

SPECIAL CONDITIONS _____

APPLICATION _____

LOAD (radial, thrust or both) _____

Name _____ Title _____

SIZE _____

Company _____

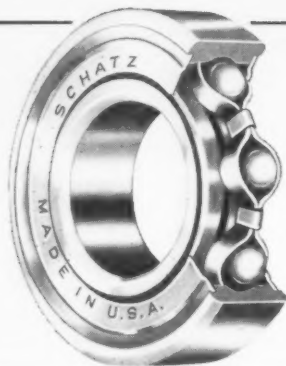
SPEED _____

Address _____

LIFE FACTOR _____

City _____ Zone _____ State _____

Schatz makes the most varied line of Ball Bearings to fit your needs



"Functional Precision" Ball Bearings—BR series

One piece race type with ball cage. Designed to give all the precision you require under certain ratios of load, speed and life expectancy. Available in open type, single or double shielded, single or double sealed with Schatz patented low friction plastic seal. Or with one shield and one seal on special order.

23 sizes from $\frac{3}{16}$ " to 1" — 6 types in each size + specials

"Commercial" Ball Bearings—The most complete and varied line anywhere.

UNGROUND BALL BEARINGS "TYPE A"—Every standard type—radial, thrust and radial thrust.

GROUND BALL BEARINGS "TYPE B"—Used and recommended where greater accuracy and smoother running qualities are needed and where loads are heavier and speeds higher.

1033 sizes to match your Bearing Application Needs



SCHATZ
BALL BEARINGS

THE SCHATZ MANUFACTURING COMPANY • Poughkeepsie, New York



Hot Saw and Mill, Sawhill Tubular Products, Inc., Mercer Pipe Division, Sharon, Pennsylvania.

Continuous Butt Weld Pipe Mills

• The producers of pipe, together with Aetna-Standard, continually search and develop ways to improve costs and yields and to develop a better pipe product.

Each Continuous Butt Weld Pipe Mill has individual characteristics . . . new ideas and innovations specifically for the individual production needs. No mill is an exact duplicate of a previous mill.

Two of Aetna's best known developments for

increased production have been the Rotary Hot Saw and the Rotary Kick-Off. Many other developments have been tested and applied, particularly in the area of pipe handling.

Aetna-Standard builds more of these mills than any other manufacturer, not only in this country but in foreign lands as well. Aetna mills produce in different size ranges from $\frac{1}{8}$ " to 4" at ever-increasing mill delivery speeds.



BLAW-KNOX COMPANY

*Aetna-Standard Division
Frick Bldg., Pittsburgh, Pa.*



The Image of CF&I... producer of
CLAYMONT
STAINLESS-CLAD PLATE

This giant steelman symbolizes CF&I... one of America's top-ranking primary producers of quality steel products. He reflects CF&I's pledge... "not merely to *sell* but to *serve*"... by supplying ever-improved products for industry's new and more demanding requirements. Products like CF&I-Claymont Stainless-Clad Steel Plate.

Claymont Stainless-Clad Plate...

- provides the same *protection*—against corrosion, abrasion or product contamination—as solid stainless steel, on applications where only one side

of the plate is exposed to such wear factors.

- provides the *economy* of a carbon or alloy steel backing plate.
- is supplied in AISI stainless specifications 304, 304L, 316, 316L, 316Cb, 321, 347, 405, 410, 430 and ASTM specifications A-263 and A-264, plus others to meet special requirements.

The stainless cladding... from 5% to 50% of total plate thickness... is inseparably bonded to the backing plate.

Get full details from the CF&I sales office nearest you.

CF&I-CLAYMONT PRODUCTS: Carbon Steel Plates • Alloy Steel Plates • CF&I Lectro-Clad Nickel Plated Steel Plates • Clay-Loy High Strength Low Alloy Steel Plates • Flanged and Dished Heads • Manhole Fittings and Covers • Fabricated Steel Plate Products • Large Diameter API Pipe

Claymont Steel Products



THE COLORADO FUEL AND IRON CORPORATION STEEL

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Odessa • Oklahoma City • Phoenix • Portland (Ore.) • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Tulsa • Wichita

In the East: WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

CF&I OFFICE IN CANADA: Montreal • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

6921



*"Been workin' her hard for 14 years
...she's as fast and accurate
as the day she arrived"*



NIAGARA

POWER SQUARING

SHEARS

Precision made Niagara Shears are built to cut with micrometer accuracy ... and to keep cutting that way.

Thousands are in use, but comments are nearly identical. Makes no difference how hard they're worked. Three shifts a day, month after month, year after year ... a Niagara Shear *continues* to be accurate.

"Don't have to change knife clearance"

No adjustments needed for cutting different thicknesses of stock ... even at the same time ... with consistently accurate, burr-free results. *And much longer knife life!* The secret is in the rigidity of Niagara's exclusive box section design. "Upped production 25%," says one user, "because we have fewer adjustments to make."

"Costs less to operate"

There's less to do, less to learn and less to go wrong. Never even have to worry about damaging the machine by forgetting to change the knife clearance. Once set, Niagara Shears need no further adjustment. "Been using Niagara's for 10 years ... never had downtime for repairs or maintenance," says another user. Even after long, hard use when it becomes necessary to turn the blades or change knives, it's a very easy matter. Nothing like Niagara Shears for simplicity.

FACT BOOK FOR YOU

Bulletin 69 is filled with customer reports on Niagara Shear performance. You'll value it. Write today.



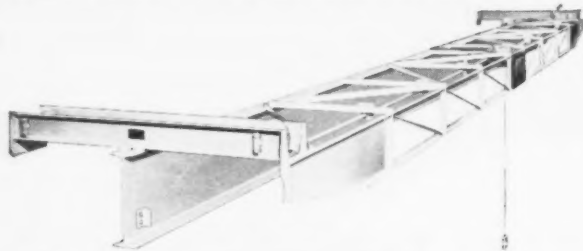
BUY OR BUILD YOU SAVE WITH MMM CRANES

New economy, safety and load-handling efficiency can be yours with an MMM Crane. More than 70 years of crane-building experience is your assurance of the finest workmanship, materials and structural and operational features.

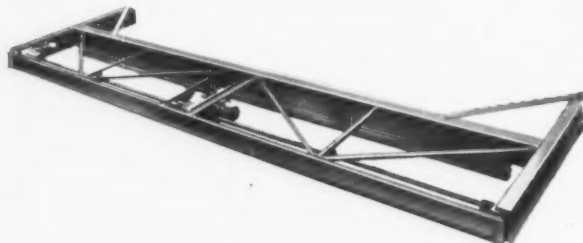
"Build-it-yourself" components are available to assemble bridges for cranes up to 10 tons and spans to 50 feet. Pre-engineered, highly standardized components for many other cranes we construct on order, reduce costs substantially for owners. Engineered to the job Shaw-Box Cranes, in various types and in capacities to 500 tons and more, are serving all kinds of industries.

Whatever your crane needs, we invite your inquiry. Ask for Bulletin 15025-1A.

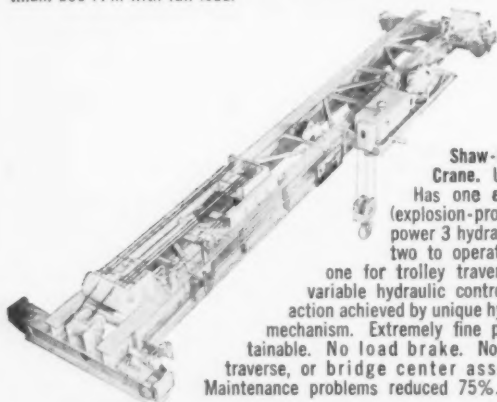
ELECTRIC TRAVELING CRANES



Type NE-SUH Load Lifter Crane. Up to 10 tons, 50-foot span. Popular in paper mills, warehouses, structural plants to serve a main bay or local area. Single girder, underhung. Operates on straight or tapered I-beam flange. Available with transfer bridge. End trucks have 6-ft. wheel base. Wheels adjustable to fit 8" to 24" I-beams. "Shaw-Matic" bridge drive provides smooth, cushioned acceleration and braking. Safer, faster spotting action. Pendant push-button control. Three speeds. Maximum 150 FPM with full load.



Type SBE Load Lifter Crane. Up to 5 tons, spans to 40 feet. Widely used in side bays in machine shops, paper mills and other plants of moderate size. Single girder, top running. Pendant push-button control. Three speeds. Maximum 150 FPM with full load.



Shaw-Box Hydraulic Crane. Up to 10 tons. Has one electric motor (explosion-proof design) to power 3 hydraulic motors — two to operate the bridge, one for trolley traverse. Infinitely variable hydraulic control. Hoisting action achieved by unique hydraulic lifting mechanism. Extremely fine positioning obtainable. No load brake. No hoist, trolley traverse, or bridge center assembly gears. Maintenance problems reduced 75%.

59L-5



OVERHEAD LOAD HANDLING EQUIPMENT

Products of

MANNING, MAXWELL & MOORE, INC.

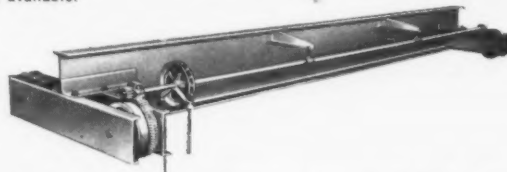
Shaw-Box Crane & Hoist Division • Muskegon, Michigan

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario

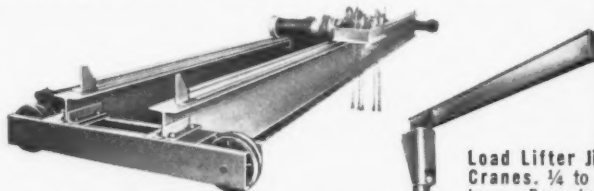
HAND-OPERATED CRANES



Type NH-SUH Load Lifter Crane. Up to 10 tons, spans to 50 feet. "Build it yourself" components to construct a single girder, underhung crane bridge at low cost right in your plant. Standard components include two assembled end trucks with 6-foot wheel base and wheels that can be adjusted to fit 8" to 24" runway beams. Also provided are shaft bracket and couplings and bearing assemblies; chain wheel and guide and 20 foot hand chain. You buy I-beam and cross shaft locally — save freight costs. Suitable hand or electric hoist available.



Type SBR Load Lifter Crane. ½ to 10 tons, spans to 40 feet. Single girder, top running. Particularly useful for accurate manual "spotting" and where travel length is moderate. Suitable hand or electric hoist available.



Type BR Load Lifter Crane. 3 to 50 tons, spans to 60 feet. Double girder, top running. Widely used in power plants, pumping stations, stone crushing plants, and warehouses. Two lifting speeds. 28 to 37½ foot lifts. Geared to save energy. Fast acting load brake. Wire rope does not overlap on drum. No tail chains to hang and foul the load.



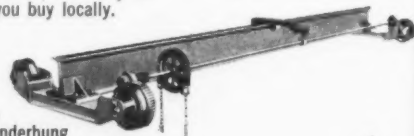
Budget Bridge Drive. Used to convert hand-operated cranes up to 10 tons to electrical operation at low cost. No drilling or machining. Push-button control. Crane travels at walking speed.

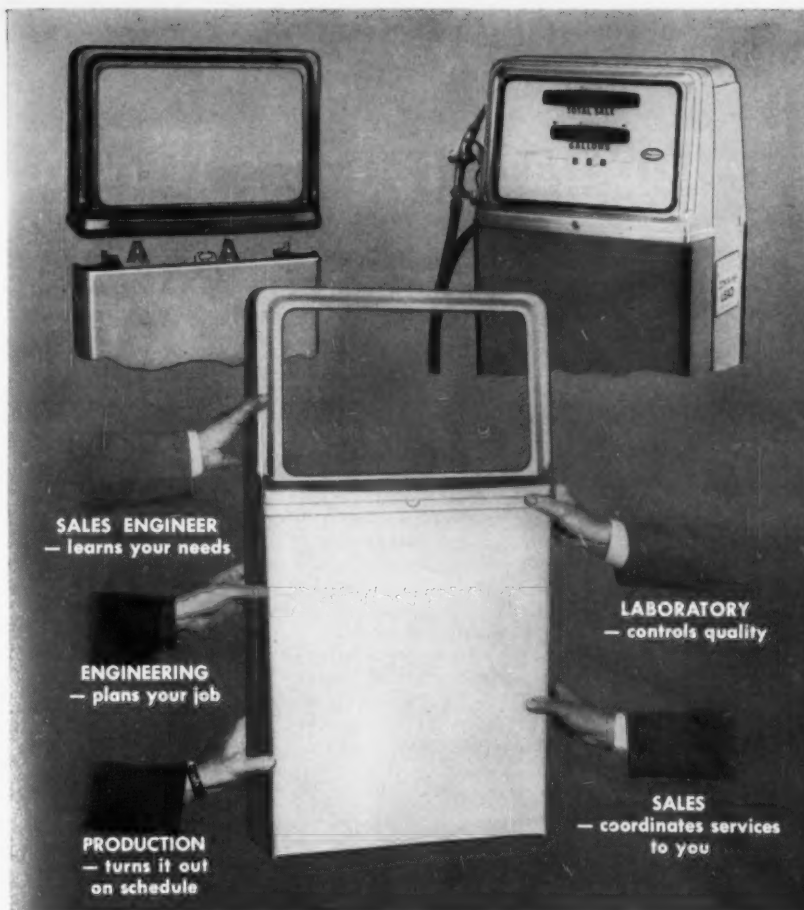
Load Lifter Jib Cranes. ¼ to 5 tons. Revolve smoothly through full circle on ball and roller bearings. No binding. Types that bolt to floor serve up to 550 sq. ft. Others set in concrete foundation; serve up to 1500 sq. ft.



Budget Gantry "A" Frame. ½ and 2 tons. Caster equipped. For low cost mobile hoisting service anywhere in the work area. "A" frames come knocked down, are easy to assemble with I-beam you buy locally.

Budget Crane Assemblies. Low-cost "build it yourself" kits available to construct single girder underhung and top running cranes with capacities to 6 tons and spans to 30 feet. You buy I-beam locally and save freight. Other big money savers are kits to build 180° swinging bracket jib cranes up to 4½ tons with reach up to 10 feet.





MANY HANDS MAKE BETTER WORK

Every inquiry, every order you send to T & W receives special attention from *each* of a battery of experts. The ideas, the supervision, the driving force of *each* one contribute, for the best results. Teamwork is an important part of T & W Technique — a way of producing forgings and stampings for you so they usually cost you less at your point of assembly.

SALES OFFICES

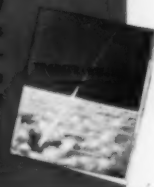
NEW YORK • PHILADELPHIA • STAMFORD
CHICAGO • INDIANAPOLIS • DETROIT
HOUSTON • LOS ANGELES

STAMPED Pump Housing Door, shown at left, is produced by T & W from 18-gauge cold rolled steel, or 0.050-gauge aluminum. It is 25 1/4" wide, 45 1/4" high, 5 1/4" deep, assembled. T & W welds on the stamped corner brackets and latch fittings, shown in the background of the illustration (A).



FORGED Diesel Connecting Rod, 16 inches long, produced by T & W Technique to hold to the exacting weight tolerances of 6 ounces, and to give a metallurgical structure of desirable machinability, and still maintain required strength and toughness for the application.

Write for 30-page book "Transue & Williams Challenges the Future" explaining how T & W technique produces forgings and stampings that cost you less at your point of assembly.



**FORGINGS
& DEEP DRAWN
STAMPINGS**



**TRANSUE &
WILLIAMS**
ALLIANCE, OHIO, U.S.A.

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Company _____
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City _____ State _____

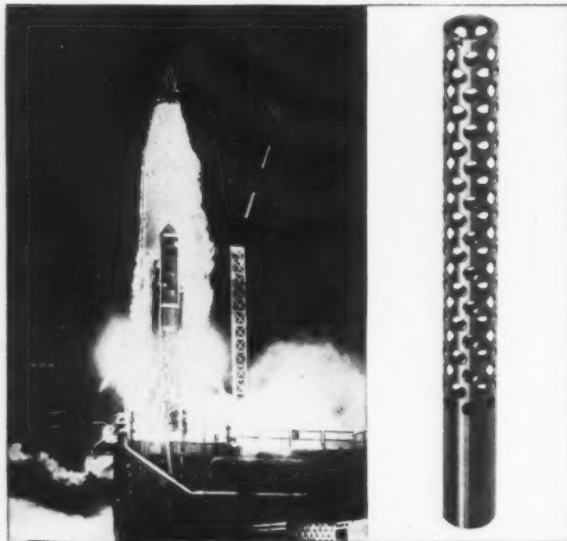


BISHOP Tubular Products NEWS

"METALS FOR PRECISION AND PERFORMANCE"

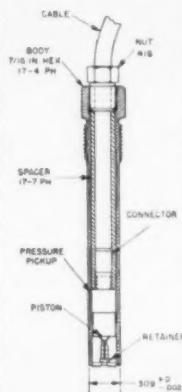
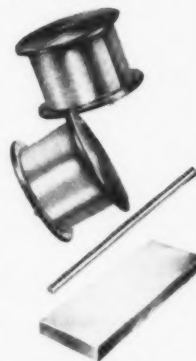
BISHOP QUICK SERVICE TEAM SOLVES STICKLER IN ATLAS PROGRAM

Telemetry bulb part (illustrated)—originally of 304 seamless tubing—cracked during fabrication. BISHOP specialists were called in—304L seamless, $\frac{1}{2}$ hard was recommended and supplied (against a tough deadline). *Results:* The 304L part met all requirements, including critical resistance to vibration fatigue within a temperature range of -80° to -380° F in inert helium, and gave completely satisfactory performance in the Atlas program. More information on 304L—or any BISHOP tubular products? Use the coupon.



BIMETALLICS NOW AVAILABLE IN MANY DIFFERENT FORMS, METALS

Bimetallics—the new family of composite metal products—is solving problem after problem these days. BISHOP capabilities in producing bimetallics are almost endless. Both *base* and *precious* metals are available in wire, sheet, and tubing form. *Typical example of popular bimetallic for glass sealing applications:* nickel-iron alloys over copper wire in sizes from .004 to .125 in. diameter . . . advantages: *low electrical resistivity, good thermal conductivity.* Look into the possibilities of improving *your* products . . . use the coupon.



17-7 PH* TUBING BEING DRAWN TO HYPODERMIC SIZE

Small diameter 17-7 PH tubing, welded and seamless, is available from BISHOP now on standard order in sizes down to .375 in. OD X .035 in. wall—on special order to .020 in. OD X .006 in. wall. Accompanying illustration shows a piezoelectric transducer used for measuring pressures up to 100,000 psi in ballistics and hypersonic research work. Use of welded 17-7 PH spacer in transducer permitted finish machining of the part *before* heat treating. Want more data on BISHOP's 17-7 PH products or other super alloys? Use the coupon.

*Trademark of Armco Steel Corporation

J. BISHOP & CO.

platinum works

FOR HELPFUL DATA USE THIS HANDY COUPON

- ☐ Bimetallics,
Data Sheet PA-1
- ☐ 17-7 PH alloy,
Data Sheet TA-2A
- ☐ 304L alloy,
Data Sheet TA-2
- ☐ Tubular Products,
Bulletin No. 12
- ☐ Platinum Metals
Products,
Catalog No. 3

Check information you'd like and mail to
J. BISHOP & CO.,
35 King St., Malvern, Penna.

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Tubular Products Division

35 KING STREET, MALVERN, PENNA.
NIagara 4-3100

THIS IS THE BISHOP LINE:
Products of all the Platinum Metals...
Small diameter Stainless Steel,
nickel and special alloy tubing



WELDYNAMICS

NEWS ABOUT ARC WELDING AT WORK CUTTING COSTS



Press frame is typical of fabrication done at Paterson-Leitch.

WELDING COST SURVEY SHOWS WAY TO BIG SAVINGS AT PATERSON-LEITCH

A cost reduction survey at The Paterson-Leitch Company of Cleveland, one of northern Ohio's largest steel warehouses and fabricators, indicated possible savings of almost \$22,000 a year.

The survey made on two typical types of welds indicated that phenomenal savings could be realized by several simple procedural changes to eliminate over-welding, and by switching from DC to AC machines to achieve the best performance from the Jetweld iron-powder electrode being used.

P. L. Holden, a Lincoln welding engineer, spotted the difficulty on one of his regular visits to the plant—offered to make the survey and received the approval

of Mr. L. M. Hardnack, Plant Superintendent.

Mr. Hardnack stated, "Because our work is so varied, it's hard to pin down costs on every opera-



Lou Hardnack, Plant Superintendent, "We appreciate the professional engineering services of the Lincoln man."

tion. However, we have tried to follow Mr. Holden's recommendations, and I would be safe to say that we have realized at least 60% of the predicted benefits."

For help with procedures and cost reduction ideas call your Lincoln welding engineer today.

NEW IDEALARC WELDER TAILORED TO YOUR NEEDS

The new Lincoln Idealarc "TM" welder has been designed to meet the needs of any shop.

The key to the "TM" model's versatility is a wide range of options that expand the applications for the machine.

Basically the Idealarc "TM" is a transformer type AC or AC/DC machine, depending upon the choice of the owner, with a moveable core reactor current control. Many new features have been built into the machine to improve welding characteristics, increase efficiency and to protect the machine.

Special features such as remote current control, remote selector switch control, ML-2 power pack, 115 volt push-button control, and others, are optional to adapt the machine to any welding requirement. Some of the options are available in kit form and can be installed in the field.

These new Idealarcs are available in 300, 400, 500 and 650 amp sizes.

Bulletin 4607.1 has all the details and specifications. A copy may be obtained by writing The Lincoln Electric Company.

THE LINCOLN ELECTRIC CO.

Dept. 1556 • Cleveland 17, Ohio
The World's Largest Manufacturer
of Arc Welding Equipment



Concrete reinforcing specialties, shown above, were fabricated from Republic's Manufacturers' Coarse Wire by Superior Concrete Accessories, Inc., Franklin Park, Illinois.

Some Concrete Facts About REPUBLIC STEEL WIRE

Annually, Republic supplies large tonnages of manufacturers' coarse wire in a variety of gages to fabricators of concrete reinforcing specialties.

Wire artisans twist, bend, and weld the wire in hundreds of specialty items, such as screed chairs, coil loops, snap ties, pick-up inserts, coil ties.

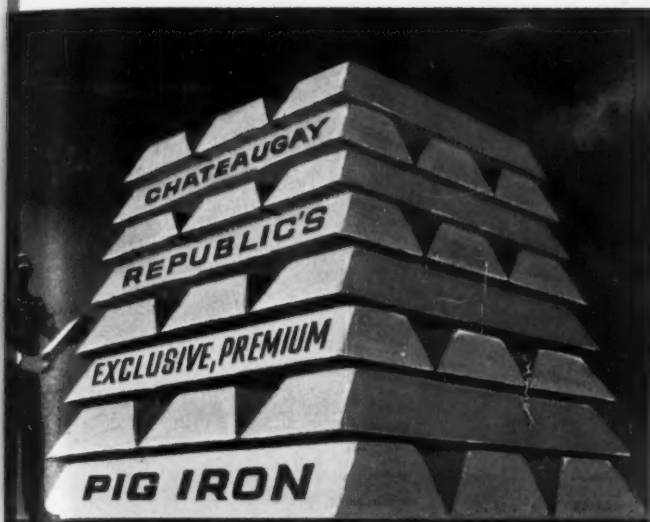
These reinforcing products are vitally important to contractors and builders working with concrete and masonry construction. Yield and tensile strength must be just right. The wire products must be capable of carrying specific loads. Equally important to producers of reinforcing specialties, is the quality and formability of the wire.

The uniform quality of Republic Steel Wire assures

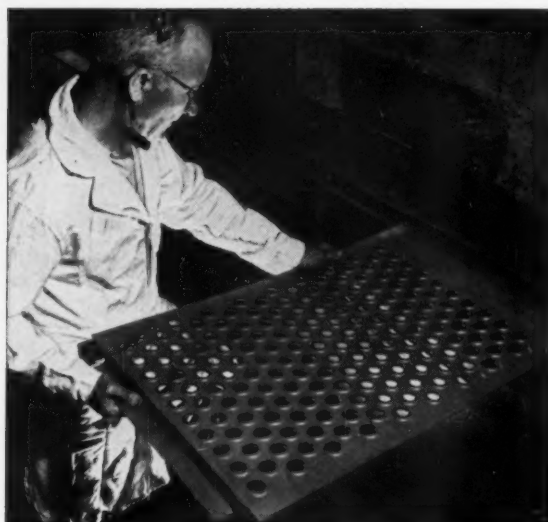
accurate, easy forming with adequate strength and toughness to meet the most difficult design and forming problems.

Republic Wire is made by specialists using the most up-to-date equipment and methods. Skilled laboratory control and careful inspection assure every purchaser of Republic Steel Wire that it will meet and suit his specific requirement.

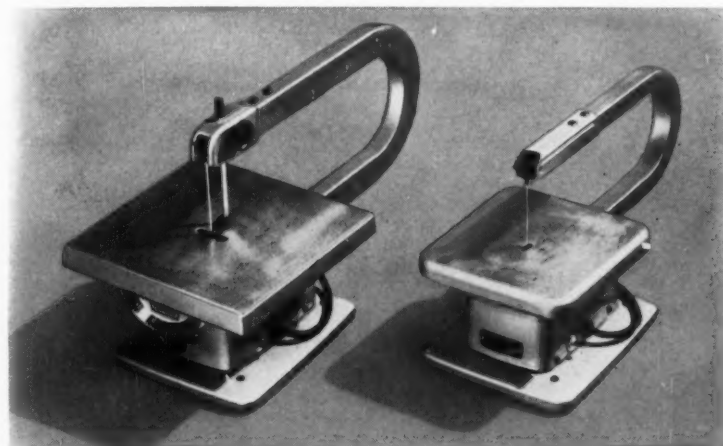
To these advantages, add the fact that for whatever type of wire you require, Republic Wire Metallurgists are always available to work with your personnel in solving production problems . . . are available to assist in selection, application, and processing of the right wire for the job. The coupon is your invitation to use this obligation-free service.



CASTING FACTS ABOUT REPUBLIC CHATEAUGAY PIG IRON as the ideal base metal for ductile iron. Chateaugay's high total carbon and unusually low phosphorus, silicon, and manganese content suit it perfectly for ductile iron use. Inherently excellent physical properties are maintained in the ductile form assuring strong, flaw-free castings accurate to patterns and shapes. Castings machine easily and economically. Republic offers you the services of its famed 3-D Metallurgical Teams—field, mill, and laboratory metallurgists—to assist in solving foundry production and metallurgical problems. Send coupon for more information.



FABRICATING FACTS ABOUT REPUBLIC GALVANNEALED SHEETS. The tight, uniform zinc coating takes all ordinary forming operations. Shear, blank, pierce, form, flange, solder, deep draw, or bead with ease. Kathabar Division, Surface Combustion Company, uses Republic Galvannealed Sheets to obtain economy and corrosion-resistance in making humidifying and dehumidifying units. In this application, Republic Galvannealed Sheets eliminate the problem of rust arising from condensed moisture. Want more facts? Mail the coupon today.



SAVINGS FACTS ABOUT REPUBLIC ELECTRUNITE MECHANICAL TUBING. By using ELECTRUNITE® Mechanical Tubing in the manufacture of jigsaws, Syncro Corporation saved time, materials, and costs on production of the blade-yoke. Square tubing was recommended for one model, rectangular tubing for the other. Results: reduction in weight of the blade-yoke, improved product appearance, savings in time, materials, assembly, and shipping costs. Contact your Republic representative, or mail coupon for more facts on ELECTRUNITE.

REPUBLIC STEEL



*World's Widest Range
of Standard Steels and
Steel Products*

REPUBLIC STEEL CORPORATION

DEPT. IA-7935

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Send more information on:

- ☐ Manufacturers' Wire ☐ Chateaugay Pig Iron
☐ ELECTRUNITE ☐ Galvannealed Sheets
Mechanical Tubing

Have a metallurgist call: ☐ Wire ☐ Pig Iron

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

A thread is generated...



*every minute of each day--somewhere
throughout the world, with a product
of this plant--the world's largest, in
terms of employment, product value,
and completeness of line, devoted
exclusively to the manufacture of
thread generating equipment.*

LANDIS Machine COMPANY

WYOMING • PENNSYLVANIA

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT



Threading Machines



Die Heads -
Rotary & Stationary



Taps - Collapsible
& Solid Adjustable



Centerless Thread
Grinding Machines



Thread Rolling Tools



Thread Rolling Machines



SUBSTITUTES CRANES for BRAWN ...and BOOSTS LATHE PRODUCTION

One Crane for Every 6 Production Workers



Hand-propelled gantry cranes serve both sides of the Lathe Assembly Dept. 125 Cleveland Tram-rail cranes, both standard overhead and gantry types, serve the Monarch plant.

EVERY manufacturer recognizes the need of mechanical handling equipment for hoisting and moving parts weighing hundreds of pounds, but not so many appreciate the value of cranes for handling parts that are within a man's ability to lift.

The Monarch Machine Tool Company, Sidney, Ohio, the world's largest exclusive manufacturer of lathes, made a thorough study of the effects of heavy manual lifting. They found that parts weighing only 50 or 75 pounds can be the cause of smashed fingers, hernias, and other injuries. When such parts must be handled numerous times a day, worker fatigue becomes a serious problem and affects not only production but workmanship.

Cleveland Tramrail cranes have proven to be the solution to the problem. For more than 15 years Monarch has been using Cleveland Tram-

rail equipment and today has 125 cranes of the standard overhead and gantry types which provide handling service throughout its fine modern plant. The importance attached to cranes here is attested by the fact that one crane is provided for every six production workers on the job at any one time.

WRITE FOR FREE COPY of *Engineering and Data Booklet No. 2008*. Packed with valuable information. Profusely illustrated.

CLEVELAND  TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 4822 E. 290 ST. • WICKLIFFE, OHIO



Plan Your Steel Insurance Now

With steel supply tightening up again and the possibility of a real scarcity in the months to come, it's nice to have your orders for plain and fabricated steel in the hands of a reliable and well-supplied organization.

Steel buyers everywhere know Levinson's reputation for having steel on hand . . . and for "fabrication that fits."

just . . . Leave it to **LEVINSON**

Warehousers, fabricators, designers of steel for over half a century

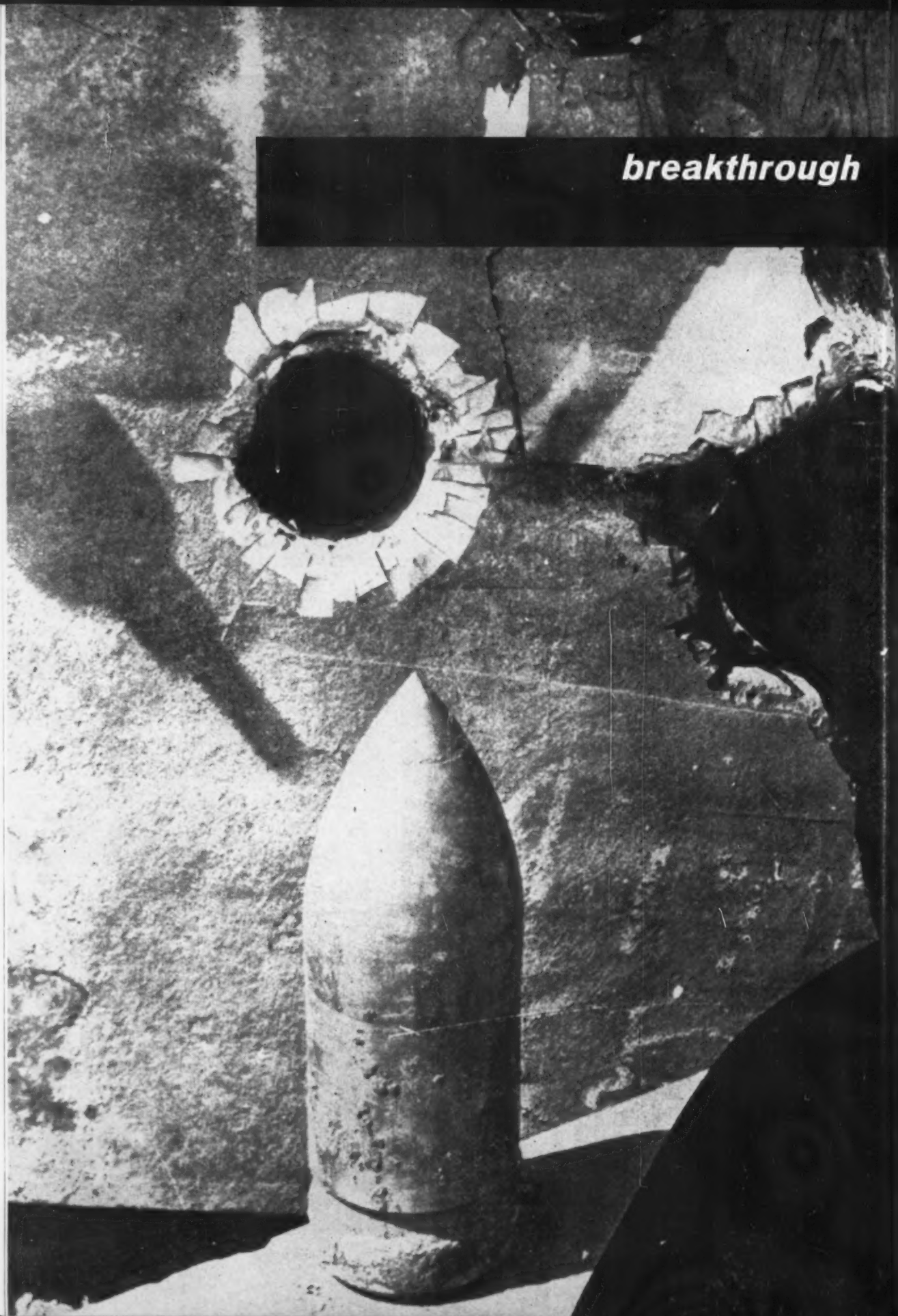
the
LEVINSON STEEL



COMPANY

Pittsburgh 3, Pa.
Phone: HUBbard 1-3200

breakthrough ... 1

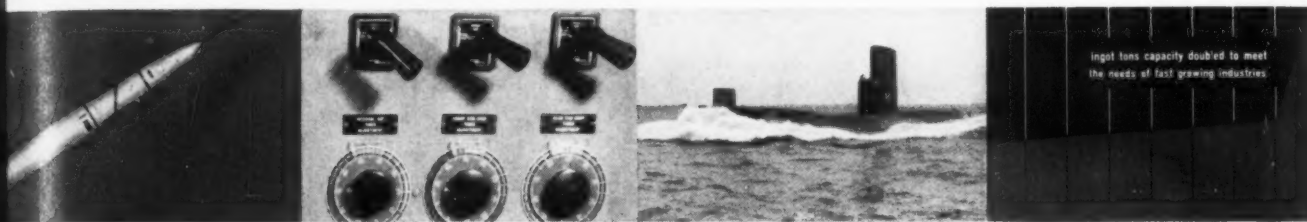


...1898

Sixty years ago, "breakthroughs" like this made headlines around the world. From somewhere in America was coming fantastic new ammunition that shattered Cervera's fleet at Santiago—won victories for Dewey at Manila Bay.

To a unique group of steel specialists, in Reading, Pa., these wondrous new armor-piercing projectiles were especially important. For they represented what was to be only one of a long line of startling discoveries in steel that would eventually unleash the workshops of a nation.

Other "firsts" followed quickly: the earliest automotive alloys; tool steels that pioneered the way to mass production; free-machining stainless steel; and more recently, new processes and wonder alloys bearing strange names most familiar to technicians of the Atomic Age . . . VEGA, MEL-TROL and Free-Cut INVAR "36".



breakthrough . . . today

Quality before quantity have been sacred Carpenter watchwords down through the years.

Within the past year, however, Carpenter doubled its ingot tonnage capacity. New acquisitions, new furnaces, mills and finishers—all completely equipped with precise and unique Carpenter quality controls—have started operation.

Capacity—mass production of specialty steels for critical applications—is an established fact.

In the years ahead, Carpenter will continue to "breakthrough" . . . to lead the way and grow apace of the ever-increasing demands of industry for the world's finest specialty steels.

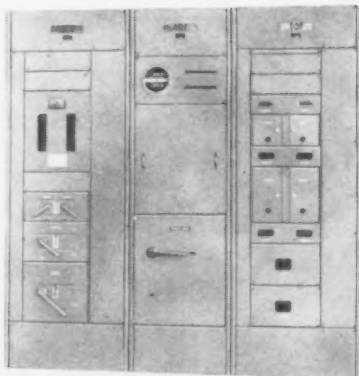
Carpenter steel

tool and die steels
stainless steels
electronic and magnetic alloys
special-purpose alloy steels
valve, heat-resisting and super alloy steels
tubing and pipe
fine wire specialties

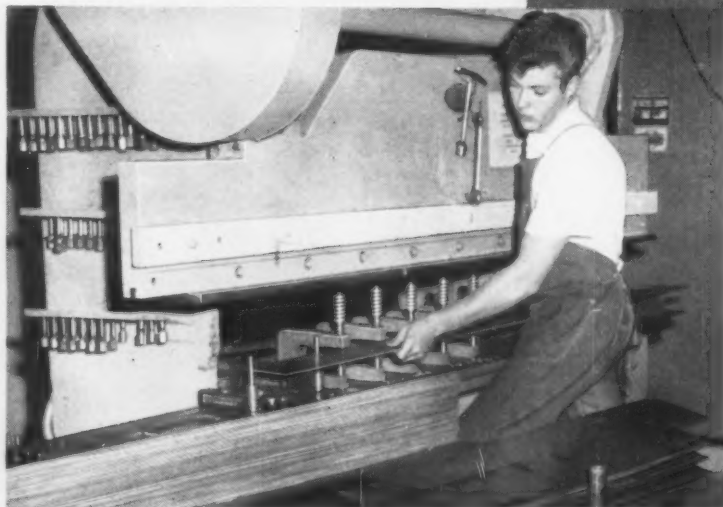
The Carpenter Steel Company
Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.



Built better by "BULLDOG"... using THE COST-CUTTING STRIPPIT SYSTEM



Power switchboard
by BULLDOG ELECTRIC. Fully
interchangeable parts.



PRESS SETUPS OFF THE SHELF! ➡

BULLDOG ELECTRIC stores Strippit drilled templates on conveniently located shelves, Strippit Hole Punching Units and Tooling on this mobile rack. Pilot pins on units slip-fit into template pilot holes for exact positioning, quick mounting outside press by bench man. All units reusable over and over in unlimited patterns.

❖ NO LOSS OF PRESS TIME!

Strippit setups cut between-run time to a minimum—just remove last setup from press bed, insert new one and start run. Both short and long runs are profitable with Strippit setups. Here, parts for BULLDOG switchboards are being perforated accurately and rapidly. In other operations, Strippit Notching Units provide equal flexibility.

H. J. LOCKWOOD, Plant Superintendent, BULLDOG ELECTRIC PRODUCTS of Los Angeles writes:



"In building BULLDOG Switchboards to perfect uniformity for full interchangeability of parts, I have centered our production methods around Strippit tooling. All the perforating and notching operations are performed without fixed dies. Work flows smoothly through the machines without tieups. In no other way could we produce this quality product so efficiently."



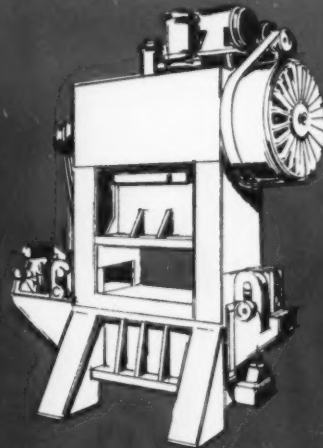
WRITE TODAY for details on
the savings you could be
enjoying with Strippit setups
on your presses!

WALES STRIPPIT INC.

202 Buell Road, Akron, New York

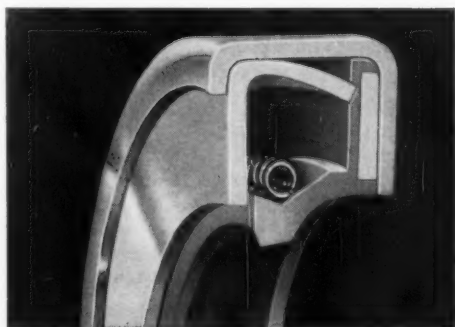
Manufactured in Canada by: Strippit Tool & Machine Company, Brampton, Ont.

Better products, *faster*, from your National Seal specialist:



HEAVY-DUTY MACHINERY
depends on National Syntech Oil
Seals to keep lubricant in its
place, minimize costly downtime.

National "prescription-blends" a synthetic just right for your industrial oil seal application!



National Syntech Oil Seals feature: 1. Synthetics "prescription-blended" to meet specific operating conditions; 2. Minimum tension on garter spring to reduce shaft-torque, increase seal life; 3. Accurately sized O.D.'s.

A National Syntech oil seal can be formulated to take specific conditions of temperature and shaft speed!

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40-ton Plymouth Diesel cuts hauling costs for Mead Corporation plant, Harriman, Tennessee

"Plymouth Diesel saves time, fuel, maintenance"

"Best locomotive we ever had" is the way the Harriman, Tenn. Division of Mead Corporation, user of steam-powered equipment for over 25 years, rates its 40-ton Plymouth Diesel. Equipped with Torqomotive Drive for smoother starts and reduced engine wear, the company's new Diesel is used 8-hours a day in switching and spotting; also hauls heavy loads quickly and safely over 3½ miles of standard gauge track with many curves.

Job-proved by continuous, trouble-free operation

in a variety of tasks, Mead's Model WDT hauls loads faster, saves on fuel costs, requires less than 20 minutes per day for routine maintenance. New Plymouth unit is also rated much easier on the roadbed, and the operator. For complete information regarding a Diesel-powered Plymouth designed to fit your haulage needs, send a brief outline of your operations to: The Fate-Root-Heath Company, Dept. A-2, Plymouth, Ohio.

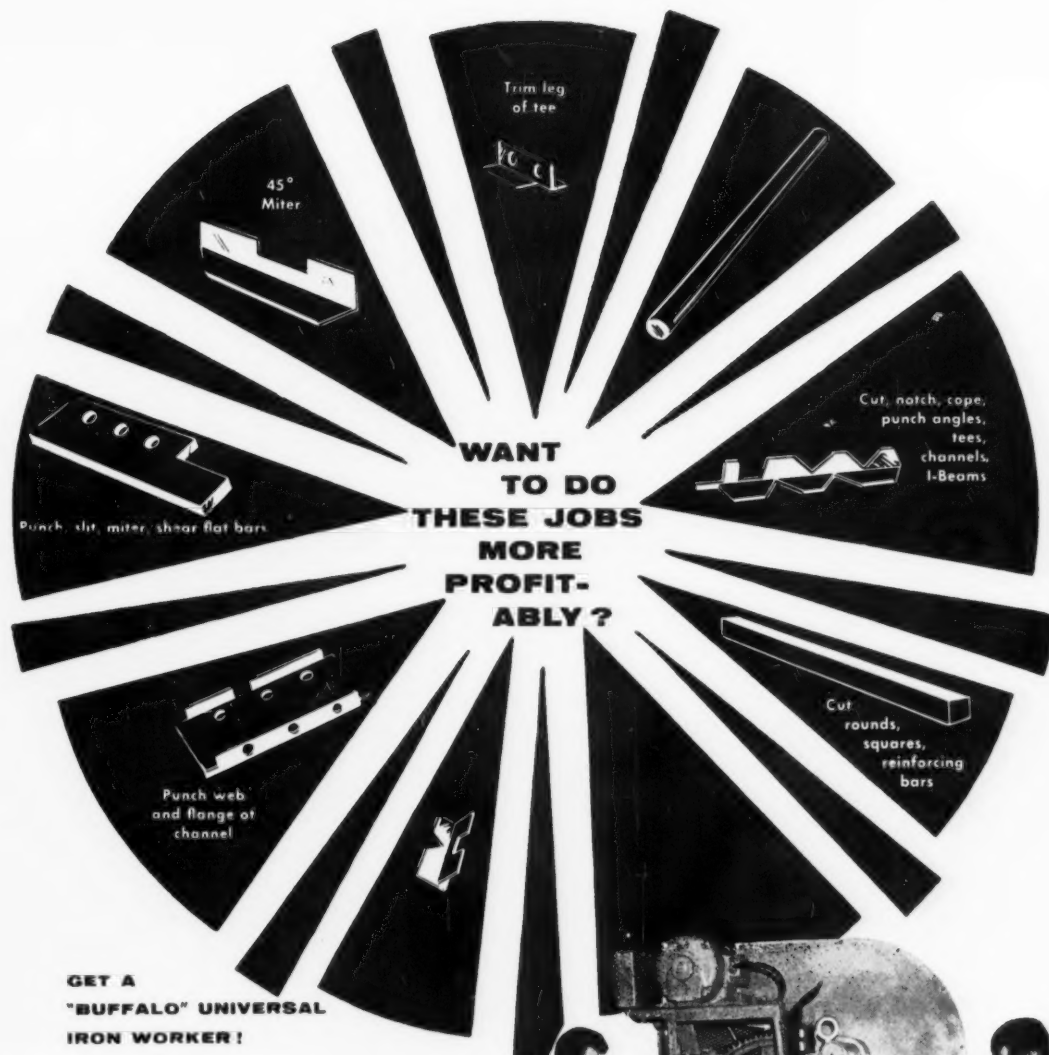
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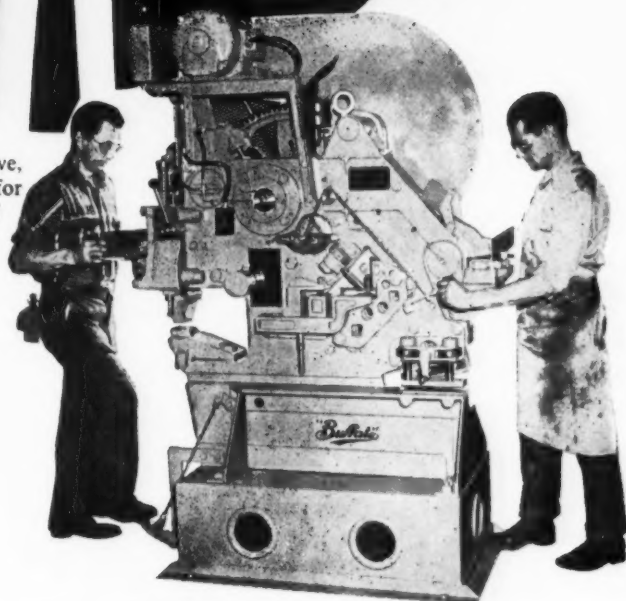
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It will pay you to investigate the "Buffalo" Universal Iron Worker. See how it can cut production and maintenance costs and increase profits in your shop!

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So reports Mr. Charles Grillo, Machine Shop Foreman at the Hancock plant of Manning, Maxwell & Moore, Inc., Watertown, Mass. The company is a leading manufacturer of valves, gauges, electronic process controls,

hoists, cranes, and a wide variety of other precision-built equipment for industry. Their Hancock plant produces "Hancock" bronze and steel valves (some with component tolerances of $+.0000$ " to $-.0005$ "'), and other products for the chemical, petroleum and power industries.

"We not only get superior finishes with Gulfcut Heavy Duty Soluble Oil," says Mr. Grillo, "but we find this oil so versatile that we use it on many jobs where we never used emulsifying oil before."

"We also find that Gulfcut Heavy Duty Soluble Oil

has no use, in stainless any pro working non-fer

May cutting Call a G mail co



Grinding a 2" steel gate valve stem (Type 970) on a centerless grinder at Hancock plant of Manning, Maxwell & Moore, Inc.—where Gulfcut Heavy Duty Soluble Oil is the coolant. Workpiece is of 416 steel, "300 Brinell" hardness.



Checking a 5 to 6 micro-inch finish on a steel gate valve wedge. are, left to right, Mr. R. M. Drennan, Gulf Sales Representative, Mr. Charles Grillo, Machine Shop Foreman, and Mr. B. W. Morrison, Quality Control Superintendent at the Hancock plant.

Grinding 2" Type 970 steel gate valve wedges on a surface grinder at Hancock plant of Manning, Maxwell & Moore, Inc. Shields removed and operation suspended to show grinding wheel and work pieces in place on stock table.

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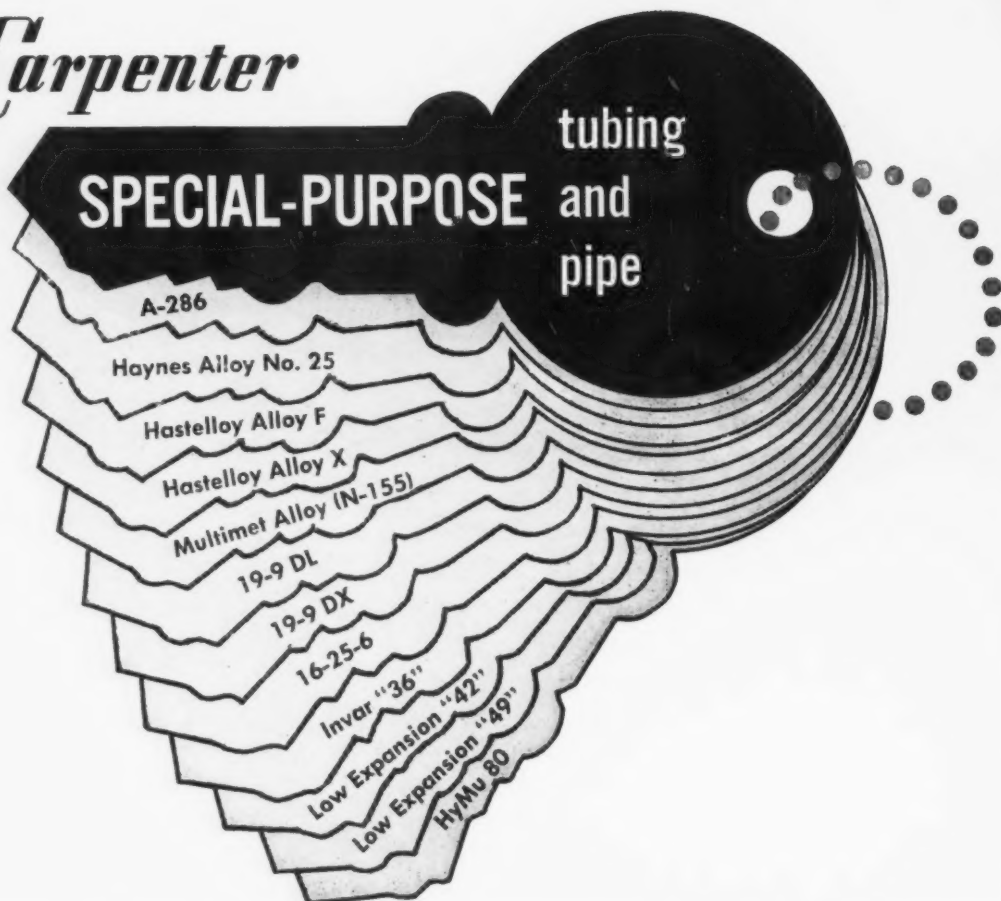
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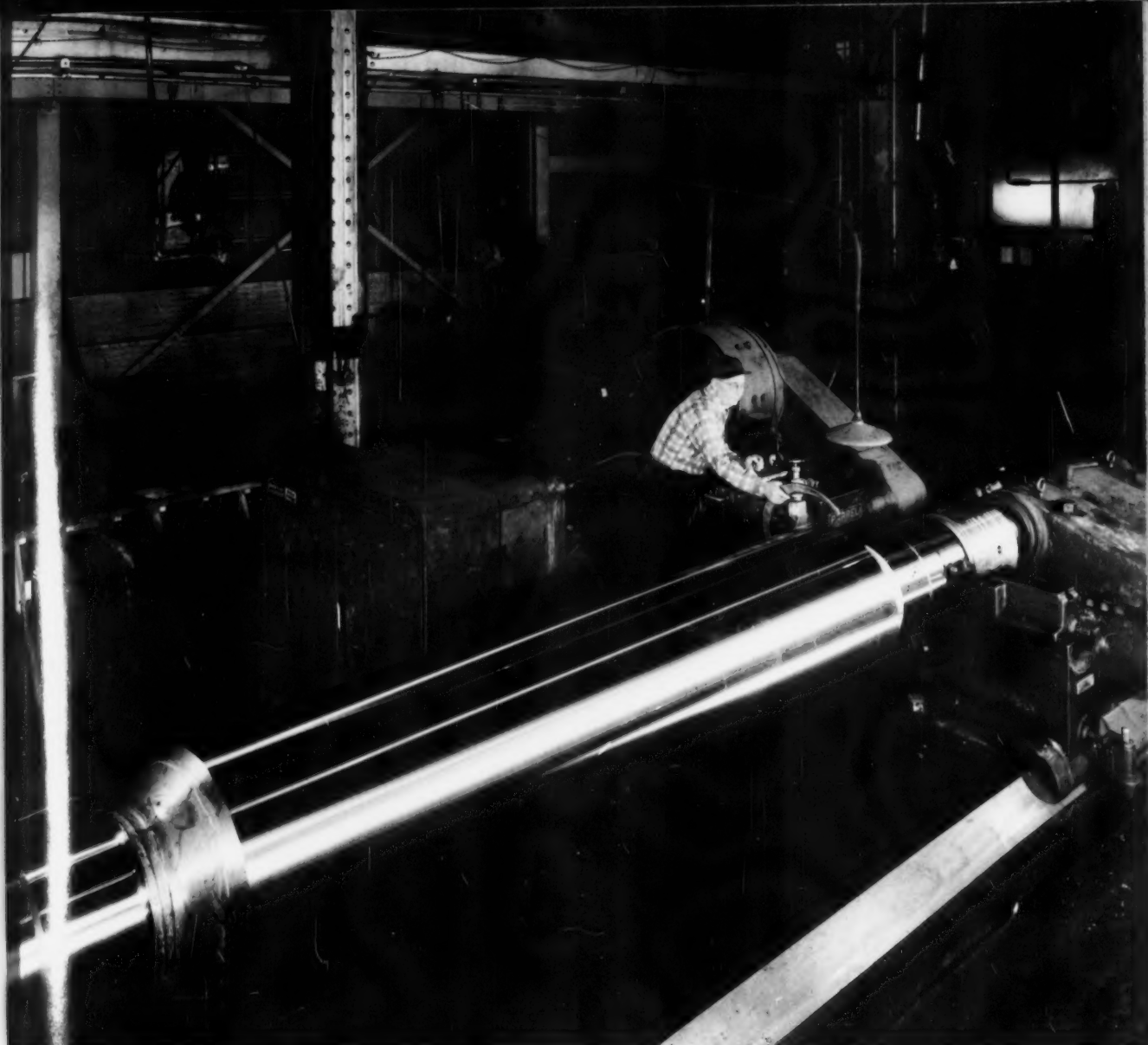
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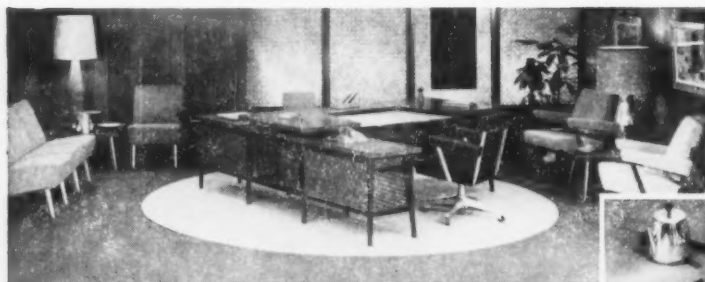


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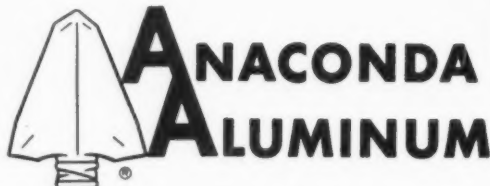
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Roebling Tire Bead Wire: Packaged for Maximum Benefit

The problems eliminated by this unique reel-less core packaging system are manifold. Loads are palletized two cores per pallet and may be stacked two or three high. This, plus the fact that

you need not accumulate empty reels means storage space requirements are cut to *less than half*. You do away with all freight and handling costs on reels, the bother and expense of "bookkeeping" returnable reels, and the freezing of money in reel deposits.

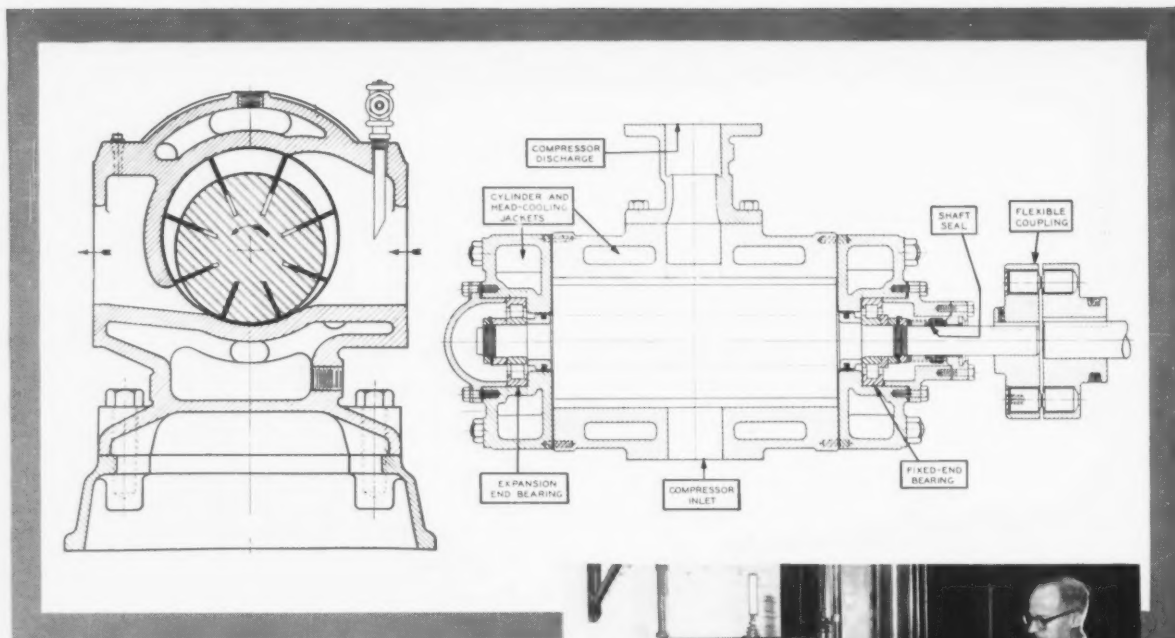
This is typical of Roebling's advanced packaging methods—that makes handling Roebling high-quality wire so

much easier. For details on this efficient Roebling Tire Bead Wire packaging method, or information on other types of Roebling wire, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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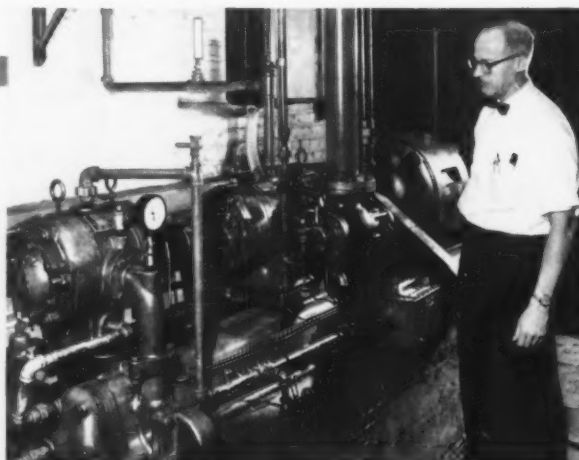
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Hard service never affected this Fuller rotary's original output—230 cfm. of air at 90 lb. G., reports Mr. Schott, chief engineer, Thomas C. Wilson, Inc., Long Island City, N.Y.

FULLER ROTARY COMPRESSOR RUNS 13 YEARS WITHOUT DOWNTIME



A Fuller rotary at Thomas C. Wilson, Inc. got its first maintenance shutdown recently, for renewal of roller bearings and rotor vanes—after running without downtime since 1945.

4 years of 24-hour service. The Wilson plant makes tube cleaning equipment, tube expanders and portable pneumatic tools, and so makes heavy daily demands on shop air. For the first four years, three-shift operation kept the Fuller rotary running round the clock. Since 1949, it's been working eight-hour shifts. **Simple design means trouble-free service.** Besides

bearings, the only moving parts in a Fuller vane-type rotary compressor are the cylindrical rotor and the blades. These compensate for wear automatically. Cylinder head slips off, permitting blade and bearing inspection in a matter of minutes.

Compact and vibration-free. Direct-drive system saves space. Simple, rugged design gives constant service without extensive supervision. Thus, Fuller rotaries can be installed out-of-the-way—on upper floor, on balconies, in basement corners, using low-cost, light-weight foundations.

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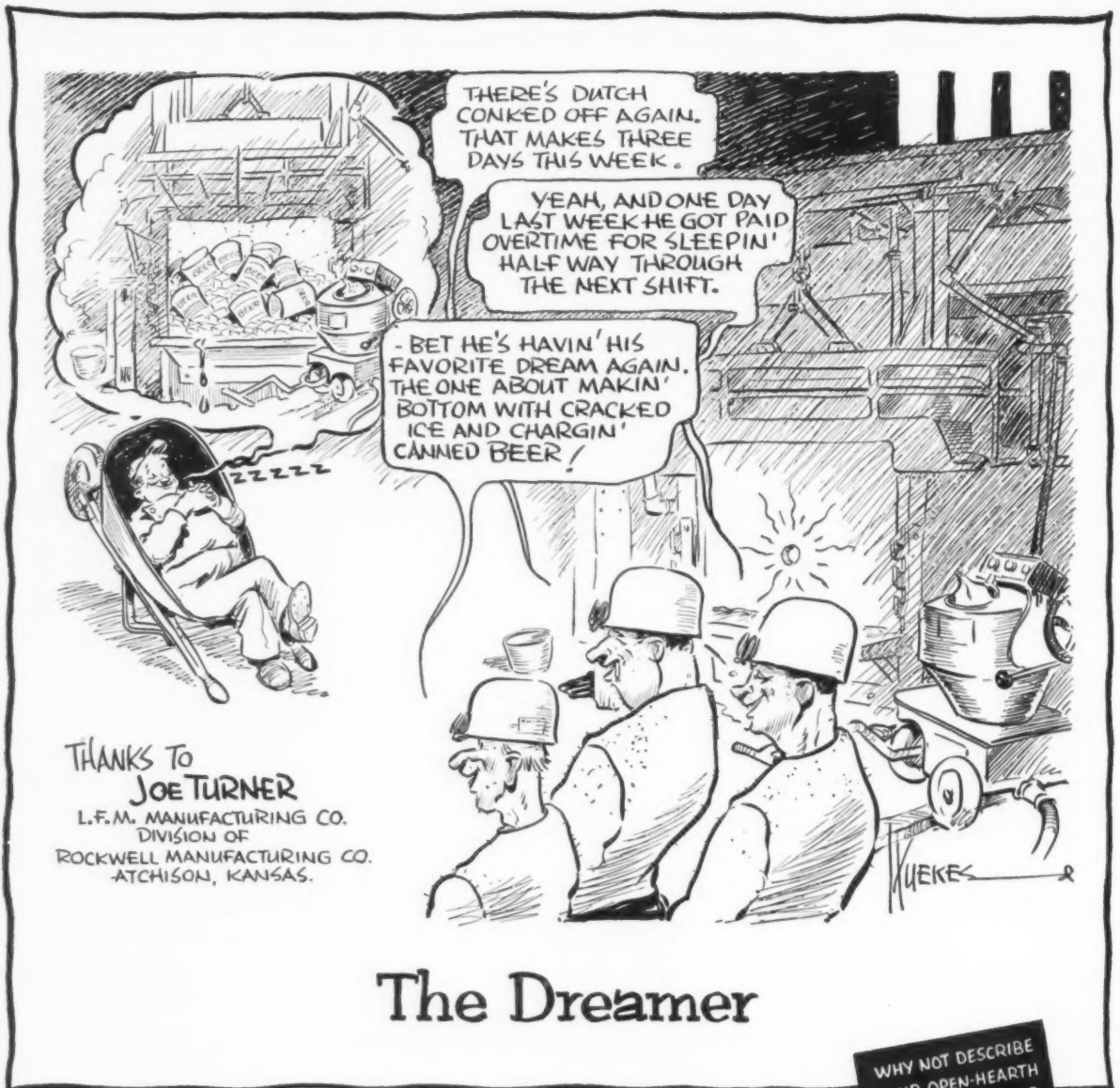
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Magnefer and Syndolag Set Fast—Stay Fast

CAPITAL SPENDING BY METALWORKING may be heading for a new high. This is one of the conclusions to be drawn from The IRON AGE's latest survey of capital spending appropriations by metalworking companies--the fourth in a continuing series. Appropriations in the first quarter of '59 approached the level of '57, when capital spending was at its peak. Steel leads the way.

WHAT'S HAPPENING IN METALWORKING is in line with what's going on in other industries. Dept. of Commerce expects business outlays for new plant and equipment to hit \$32.6 billion this year. This would be 7 pct ahead of '58, but 12 pct less than the record \$37 billion of 1957.

DIVERSIFICATION CAN BOOMERANG, says a business consultant. A survey of product lines carried by a number of companies indicates that 10 to 50 pct of products made were actually losing money.

ANOTHER FIRST FOR STAINLESS is in the making. Initial use of stainless on a commercial building in a color other than black will be on new 22-story Gateway building in Pittsburgh. While this job will be in charcoal gray, the producer, Washington Steel, now offers stainless in a wide range of colors. Restaurant equipment makers are interested, too.

TIGHTER MONEY will begin to have a slowing effect on home building in the second half, says The Value Line Investment Survey. But this will be offset by bigger spending in other construction categories. Value Line estimates total spending in '59 will be \$53.5 billion, compared to \$49.0 billion last year.

EXPENSE ACCOUNT SPENDING is under Internal Revenue Service scrutiny. It's particularly interested in checking the validity of big-ticket spending for club dues, hunting lodges, and so on.

THE U. S. ECONOMY is strong and getting stronger, says the National Bureau of Economic Research. It adds that national product per person is higher than in any other country.

PUMPMAKERS SEE BETTER TIMES ahead. Bookings of small, standard pumps is up. And this usually forecasts a boom in heavy equipment orders in about six months.

METAL FABRICATORS see no hope of getting out from under whatever the basic steel labor settlement is this year. They complain that costly concessions work a real hardship on them. But they usually are stuck with the pattern.

ON THE BALL 500,000 TIMES A DAY BRIDGEPORT Free-Machining Brass Rod!

Because ball point pens are in everyday use, production of vital brass tips becomes astronomical along with quality control problems.



These tips — one of which is shown much enlarged — are produced at ultra-high speeds. The brass rod needed for them must be flawless in every respect. *Consistent* metallurgical composition, *precise* dimensional tolerances and *unvarying* standards of machinability — if any of these qualities vary even a fraction, production comes to a frequent and costly halt.

That's why Revere Metal Art Co., Inc., New York City, specifies Bridgeport Free-Machining Ball Point Pen Brass Rod for these inserts. It meets all requirements for precision, straightness, workability, machinability and tolerances — and, in addition, provides a surface finish that keeps finishing time and costs to a minimum.

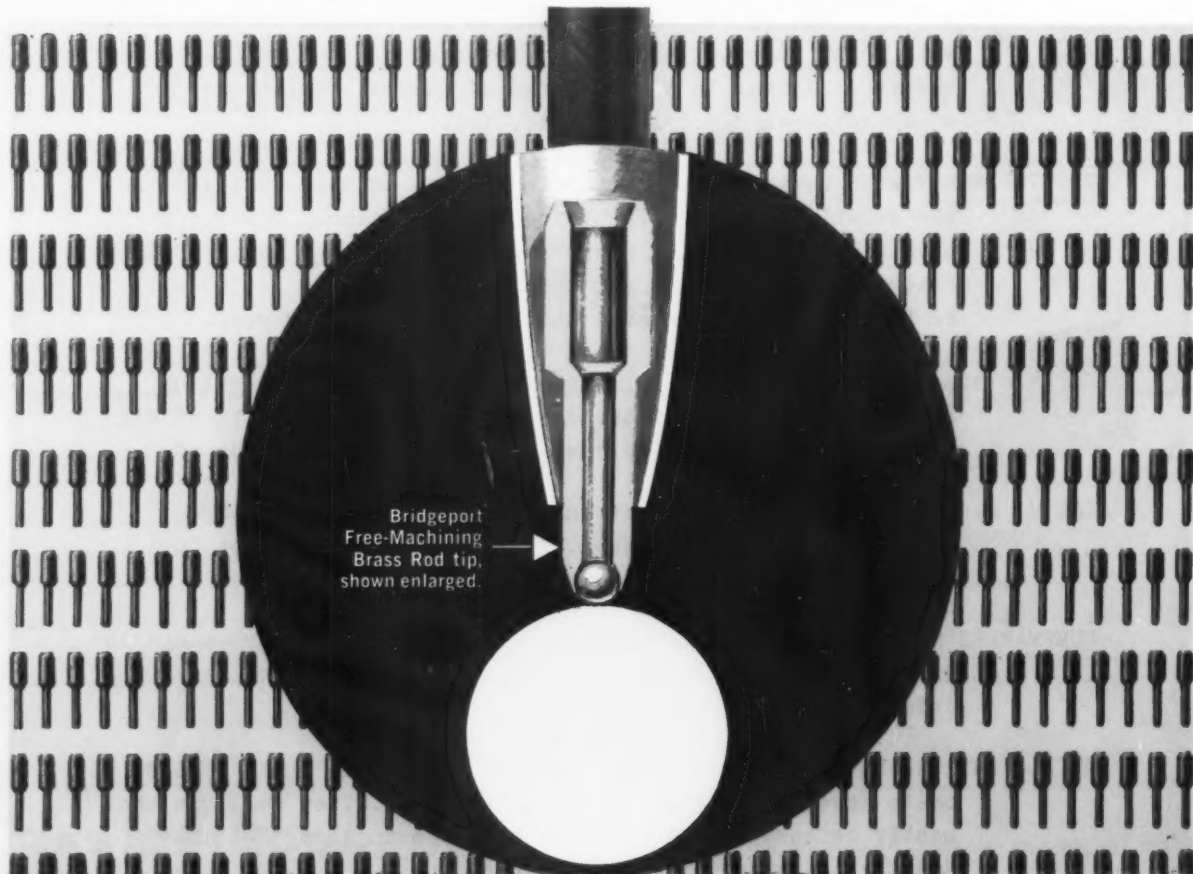
Whether you use rod, strip or tube, you can count — just as Revere does — on getting consistent quality every time you specify Bridgeport Brass Alloys. It will pay you to get the complete story. Call your nearest Bridgeport Sales Office or write us direct for a complete list of Bridgeport products — Dept. 3406.



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How Steel Labor Pattern Hurts Metal Fabricators

Small metal users wish they could get out from under costly concessions based on basic steel contracts.

But there's little hope that things will be any different this year.—By G. J. McManus.

■ While basic steel fights it out with steel labor, other industrial groups wait in isolated positions for their turns with the United Steelworkers of America.

Aluminum producers, stamping shops, and heavy fabricators hope the steel stand will be successful. Because whatever happens to steel will probably happen to them. Little hope is held for special concessions.

"We're Different"—"And whatever hurts steel will hurt us more," say fabricators and others in the

Steelworker orbit. They feel there is extra need this year for negotiations based on their own problems. According to one structural fabricator, 85-90 pct of the small companies in his field have been losing money.

Aluminum sees no sure end to the price war that brought profit reductions for major producers in the first quarter. Shipments are up but earnings are down.

Competitive Markets—Can companies report record shipments but they, too, have a price bout going. In relation to sales, first quarter earnings were skimpy.

Prices of miscellaneous forgings dropped 12 pct in the first five months of the year. Forge shops report rough competition.

These bleak figures will have little effect on agreements eventually signed. Fabricators will get

substantially the same contract negotiated by basic steel.

Steel Is the Key—"The best we can hope is that steel will hold the line," says Hugh S. Calderwood, president of Armstrong & White, Inc., Pittsburgh stampers.

In pushing for a big new package, Steelworker officials point to the sharp profit increase for steel in the first quarter. Exactly how big and how artificial this increase is can be argued and is being argued. But in any case the union is making ability to pay, a yardstick for wage increases.

Caught in Squeeze—For fabricators this means their contracts are being negotiated on the basis of someone else's profits. With steel in a very special boom, the squeeze created could be unusually damaging this year.

Once the basic pattern has been

How a Fabricator Looks at Labor Talks

Hugh S. Calderwood is president of Armstrong & White, Inc., a Pittsburgh stamping firm. He heads the industrial committee of Pittsburgh's Small Manufacturers Council, an organization of fabricators. He sees this outlook:

The Pattern

The basic steel pattern will be applied with only minor variations to the great majority of companies organized by the United Steelworkers of America.

Right to Negotiate

Individual companies have no real opportunity to negotiate. They are given the package agreed to in basic steel and it is a difficult problem to negotiate any variations from it.

What's Needed

Fabricators should have a completely different contract basis from that in steel. Labor costs are a bigger percentage of product costs for the fabricators.

Profit and competitive situations are different. What's needed also is an organization of fabricators for bargaining purposes.

The Outlook

There is little prospect of any change this year. Past efforts toward a uniform front have gotten nowhere. Fabricators tend to fight their own individual battles. The best fabricators can hope for is that basic steel will hold the line.

established, the union switches its pay standard. The argument becomes one of equity: The steel mills are paying so much; it isn't fair for you to pay less to a man living next door.

Different Conditions—To this fabricators answer that the man next door is working for a different kind of company, governed by different economic conditions. John P. Roche, president, Heppenstall Co., spells out the essential points of economic difference:

"Most fabricators are identified with industries not totally organized," he says. "They operate in areas where there is very little price stability."

Double Standard—As the present situation points up, the fabricator may have his costs set by one standard and his prices by another standard, completely separate and unrelated.

Why can't fabricators bargain for themselves? Basically, because they are outnumbered. Out of 1.250 million Steelworkers, less than half are in basic steel. However the basic group lies in a bloc of companies with common operations and common problems.

How to Buck Pattern

It Can Be Done—Standing alone, the average metal fabricator simply isn't big enough to bargain effectively, though it can be done. One plant fabricator has taken a hard-nosed position in recent years and made it stick.

"We don't have Supplementary Unemployment Benefits or cost-of-living provisions. Our expiration date is different. We won't accept the language of the steel contract; clauses are re-worded to fit fabricating conditions."

But It's Tough—How is this kind of independence achieved?

No Common Ties—The outside half is scattered throughout nonferrous, fabricating, canmaking and other industries. Many small companies are involved. There are few ties to promote a common front.

Please Sign Here—For plants that are struggling to stay alive, the idea of bucking the union makes good talk at the men's bar but doesn't sound realistic when the local business agent is at one door and the wolf at the other. They are given the package. They sign.

There may be some variations and there may be major concessions if a company is in desperate straits. "If you're flat on your back, the union will give you a break," concedes one executive. "But as soon as you get to your knees, you're expected to crawl into line."

It's Inevitable—Differences are mainly a question of timing, say fabricators; sooner or later the basic pattern catches up with everyone. For really important changes they feel there will have to be concerted action.

"What's needed is an organization of fabricators for bargaining purposes," says Mr. Calderwood, who heads up the Industrial Council of

Pittsburgh's Small Manufacturers Assn. He sees little prospect of such a grouping. "Fabricators tend to fight their own battles."

House of Cards—History bears out this comment. The Tri-State Assn., made up of companies around Pittsburgh, worked for 20 years to get unified bargaining by its members. Solemn pacts never stood up through more than 48 hours of negotiating. Someone always bolted.

In the present situation, there appears to be no attempt at organized resistance. Fabricators say they are ready to stand up and be counted on any issues that may arise in current steel talks. They see as a future possibility some type of joint negotiations, with fabricator contracts being worked out as a separate phase of steel bargaining.

Aluminum Outlook—In the aluminum industry there has been one step toward united action this year. Contracts of Alcoa, Kaiser, and Reynolds expire on the same day for the first time. Negotiations with all three companies will start in mid-June. However, talks will be separate; there will be no joint bargaining.

Anaconda's aluminum plant at Columbia Falls, Mont., signed a labor contract some weeks ago. The company increased pay 8.32¢ an hour and agreed to meet levels negotiated in current talks.

Alcoa Pessimistic—Alcoa board chairman I. W. Wilson is pessimistic about the labor outlook. He feels aluminum wages should be held down but he is not hopeful the industry can withhold any increases granted in steel.

The aluminum position is complicated by several factors. United Steelworkers represents 17,000 men in 12 Alcoa plants. Aluminum Workers International has 10,000 men in 7 Alcoa plants. United Auto Workers bargains for 4500 men in 4 fabricating plants. A fourth union talks for men at two West Coast plants.

Steel Labor: Still Hope for Peace

Despite Chest Beating, Real Bargaining Lies Ahead

Steel labor talks moved into the critical stage this week. The outlook is gloomy.

Still, there's room for give-and-take bargaining in the home stretch.—By Tom Campbell.

■ There are about 13 more days for steel labor and management to negotiate a non-inflationary steel contract. The way the wind was blowing last week it looked as if the "Chinese opera" tactics doomed chances for any sort of agreement.

But, as in past years, this bid for public support (most unusual this year) will have to be taken with a grain of salt. To do otherwise would be to assume that there will be a three-month steel strike. It does not appear likely that Dave McDonald will take his men on such a serious and perhaps devastating jaunt.

Union Strategy—The big battle this week can be called the battle of "who meets whom." With more than 400 steel labor representatives in New York ready to meet with management people, one can only suspect that Mr. McDonald wants to give the boys a chance to blow off steam. Also, there is perhaps the basic attempt to lay the groundwork for a possible charge of non-compliance with the collective bargaining requirement—in case the union might want to use this "strategy."

At any rate the present management team has so far completely frustrated the union team. In all previous sessions the atmosphere was substantially different. In the current negotiations the air has been rather cool from the very beginning. Most of the union background strategy has been to attempt to "get around" R. Conrad Cooper, U. S. Steel vice president, who is chief of

1959's Union-Management Crisis

the steel company negotiators.

A Prediction—The list of "demands" made upon the union by the steel management side was an attempt to get rid of some feather-bedding and to restore more of management's prerogatives. Naturally it was labeled by the union as an attempt to take away hard-won rights. But before the midnight deadline on June 30—unless the negotiations get out of hand, as they appear to be doing this week—there will be some give and take on both sides. That has usually been the pattern of all collective bargaining sessions.

This year both sides apparently are going to go down to the wire with strong opposition to whatever the other suggests. But this is done publicly. What is going on behind the scenes is another story. This year pledges of secrecy have been taken by all steel management people and apparently by union men also. There have been few if any leaks as to which way the wind is really blowing.

Management Stands Firm—Sizing up the management position, it is hard as nails this week. But there are those in top level steel positions who are a trifle worried over the "one-year" aspect of any agreement. This, of course, is tied into the chance that a one-year pact would end in an election year, when collective bargaining must become partly political.

However, Dave McDonald appears to be in no mood to accept a freeze of present contract terms for a year. That about dumps the chance of steel management's getting into an untenable position next year similar to 1956 when the White House forced a steel labor pact. Dave's acceptance of a moderate settlement—if he made the pitch—would not hurt him with his men. No matter what is said, steel workers as a whole have no stomach for a long strike. Whether the steel management side would go for a moderate settlement, thus coming off its one-year-freeze pinnacle, remains to be seen. If it does, it will have to be late this month and the settlement will have to be plainly non-inflationary.

Reason for Hope—About the best that can be said this week is that both sides are now in the mood to negotiate—regardless of the public relations blasts that seem to indicate otherwise. With the Wage Policy Committee having given him a free hand to get the best pact he can, Dave can run the show from here on out. By giving the 435 district union people a glimpse of union democracy and a chance to "have their say," there will be about a solid week or so for down-to-earth talks—something that hasn't happened up to now.

There are still 6-to-4 odds for a short strike. It is still likely that there will be some kind of a walk-out to suggest that steel workers are behind Mr. McDonald. The apple-cart could be upset badly, though, in the next few weeks; but The Iron Age stands on its previous story that even though the chance is slim there may be a non-inflationary settlement without a price increase. In other words, this is the year for Dave McDonald to be reasonable.

Tin Cans: Tension in a Big Year

Price Cuts, User Competition Cause Mixed Feelings

There's a good chance can-makers might produce more cans in 1959 than ever before.

But will it mean record profits for the commercial can industry?

—By K. W. Bennett.

■ With the bloody price war of the first quarter at a standstill, canmakers talk new output records. Conservative estimates put 1959 tin and "tinless" can production at 4,836,840 tons. This is an all-time high, and would beat the 1956 record production of 4,785,666 tons.

Next question facing the industry: Who's going to make them? Since 1949, an average 14.9 pct of annual can output has come from companies which make the cans for their own use—Campbell Soup (nation's third largest can producer), Green Giant, Borden, Dole, and others.

More This Year?—A few can industry sources are already betting users will make 17 to 17.3 pct of the cans they use this year. This means 753,115 tons of tin cans, compared with 669,438 tons in

1958. Total can production is expected to rise 2 to 4 pct. Cans produced by users must rise 10-12 pct over 1958 levels to hit the expected 17 pct of total can output.

The series of price cuts in January and April by Continental and American Can, were speedily reflected by the entire industry. American Can indicated it was passing along \$8 per ton savings achieved by its coil processing lines, built at a \$32 million cost (The IRON AGE, June 19, 1958). The industry feels a large part of can price cutting was to encourage big can users to buy, not make, their cans.

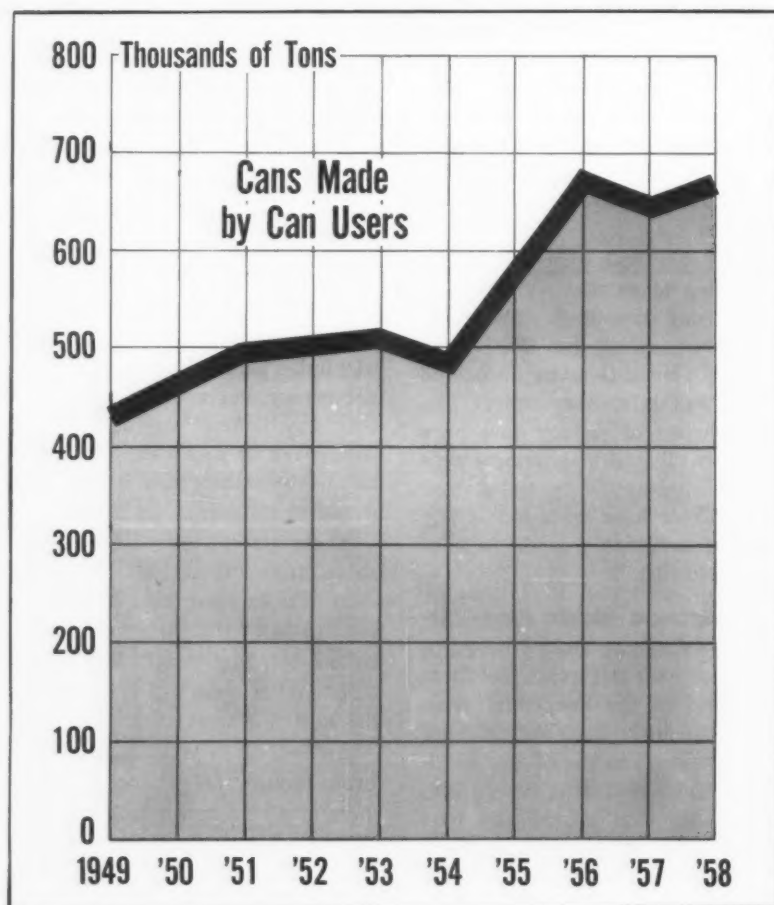
No Deterrent—Despite the upswing forecast for user-made cans, commercial canmakers are stepping up output. American Can will bring in its first Canadian tinplate coil processing plant. The firm will build a new plant in Georgia.

Continental Can is working with a coil process, and has three new plants scheduled for 1959 and another for 1960. National Can indicated last week that three new plants will go up in 1959. National Can President J. B. Whorten, Jr., told The IRON AGE that his firm has no plans for coil processing.

Opinions Differ—Have price cuts discouraged plans by users to build their own canmaking lines? One canmaking executive comments, "They'd have put up those can lines whether the price was cut or not." Continental's Lucius Clay doesn't agree.

The real test of the impact of "homemade" cans on the canmaking industry will not be apparent until the third quarter. Traditionally, 10 pct of annual can output is produced in first quarter. Another 25 pct is shipped in second quarter. The big bulge, 40 pct, comes in third quarter.

Why Canmakers Are Worried



Recruiters Look At Foreign Engineers

■ Personnel recruiters report rising demand, again, for engineers and research workers. If you're having trouble finding qualified men—foreign recruiting may produce the manpower.

Dr. Robert McMurry, Chicago, reports qualified men are in good supply in Holland. An experienced engineer is available for \$500-550 per month. Compared with an expected starting salary for June graduates in the U. S. this year of \$505, Dr. McMurry's figure seems reasonable.

Where They Come From—The shrinking Dutch empire has freed a number of engineers. Their scholastic background can be checked against the European colleges they attended. The East German and Hungarian refugees are supplying more research men. In this case, however, it is almost impossible to check their previous experience and training.

Danish, Norwegian, Swedish, Dutch, and German applicants are seeking U. S. jobs. One newspaper ad netted 100 applicants. The recruiter screened these to 10, all able to speak and read English. A representative of the U. S. company then selected three men.

Salary Range—College graduates, without experience, have been quite successful. Starting at \$400 per month salaries, these younger men are graduates of four year courses that are often tougher than U. S. courses of equivalent length. A six year graduate, equivalent to a Master's degree in the U. S., will want more salary but will offer at least one year of supervised field experience.

A Red Light—A word of caution from an engineering placement service: The young foreign engineer may start work at a low price, but he'll soon put on pressure for salary increases when he compares notes with U. S. graduates.



CRAB: Automatic Transportation Co. named its new lift truck so because it moves in any direction, an asset in narrow-aisle warehouses.

Lift Trucks: Boom Is Developing

■ Materials handling equipment builders are getting a big rush these days. Plants are buying the equipment they held back on last year during the Recession.

At the Materials Handling Show in Cleveland overall business was expected to increase 15 pct or more this year. Industrial trucks generally look for at least a 25 pct increase, and orders for some are running 50 pct ahead of a year ago.

At Yale & Towne, industrial truck builders, Pres. Gilbert W. Chapman feels the 91 year old firm may hit its highest sales volume in history. Sales last year were \$115 million. Orders now are coming in 50 pct heavier so a \$140 million year seems probable.

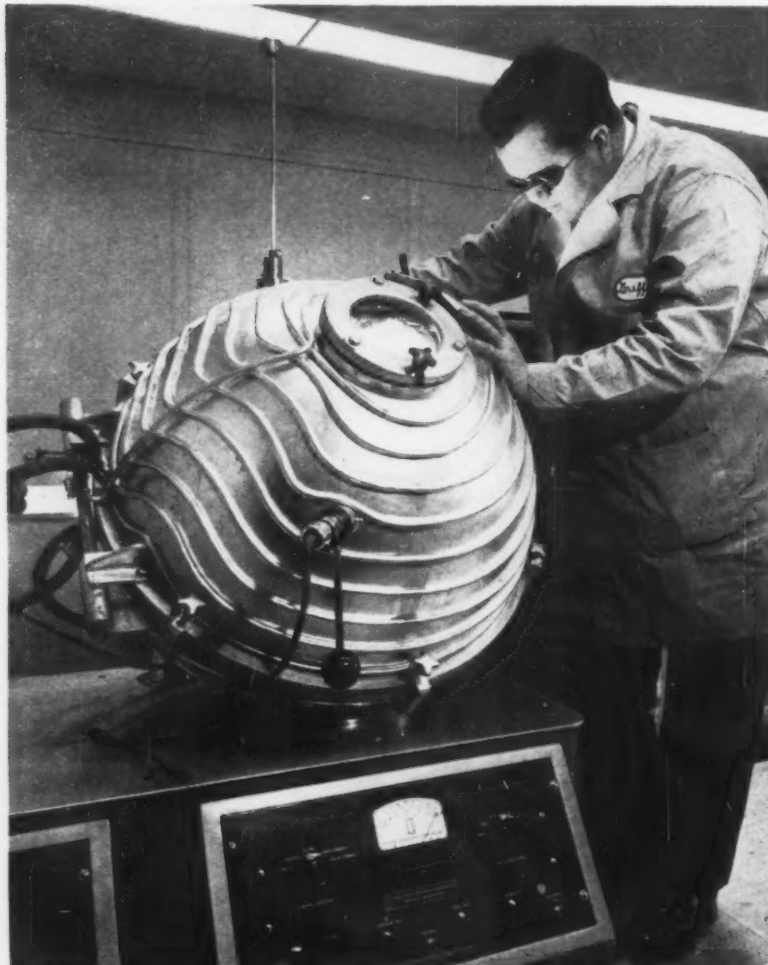
Big Replacement Market—Clark Equipment president George Spatta said new business should be

about 25 pct over 1958, better than 1957, and may equal the Korean War peak. He added the big market now is the 100,000 industrial trucks which are 5 to 25 years old and should be replaced. The used truck lot is also appearing on the scene, Spatta said, with one center in Newark, N.J., started last year.

Most speakers felt there was little import threat yet because U. S. equipment is more advanced. Biggest trend in materials handling trucks is toward narrow-aisle operation. Many new models travel sideways to carry wide loads.

Regional shows are also being planned by the Materials Handling Institute—at least 4 and not more than 6 in 1960 and 1961. Dates set so far for next year are June 6-8 in Boston, and Nov. 8-10 in Louisville.

To Make Higher Strength Steels



PROBE: Space Age-looking device probes unusual atmospheres but it will never come anywhere near outer space. It's a six-lb vacuum induction melting furnace used to develop new high-strength alloy steels in Republic Steel's new Independence, O., research center.

Galvanized Record

The 872,842 tons of galvanized steel sheets shipped during the first quarter was a new all-time high, reports the Committee of Galvanized Steel Sheet Research, American Iron and Steel Institute.

This topped the first quarter 1958 by almost 60 pct.

The sharpest percentage rise, by market, was registered by automotive buyers. The 50,961 tons they took in the first quarter topped this quarter last year by 120 pct.

Based on the first quarter figures the Galvanizers Committee predicts

total shipments for 1959 may set an all-time record, substantially passing the 2,958,000 tons shipped during 1956, the current high.

Probe Munitions Lobby

Congress is cranking up a full-blown probe of major defense contractors—firms which lately have been called the new “munitions lobby.”

First step in the investigation is set for early July. House Armed Services Subcommittee will open hearings on charges that retired military officers are joining defense

contractors, then wielding powerful influence over defense contracts.

Congress Asks—The subcommittee, headed by Rep. Edward Herbert (D., La.), now is collecting answers to a bristling questionnaire sent to the 100 top defense contractors. It requires them to furnish names, positions, and salaries of all former ranking military officers on their payrolls.

Group wants included any retired military brass who serve as consultants, directors, or in any part-time role and are paid “anything of value.”

Steelmaking Record

May steel production was a new monthly high, says the American Iron and Steel Institute.

The 11,600,000 tons of ingots and steel for castings poured barely topped the previous monthly high—11,567,745 tons poured in March of this year.

First Five High—The 53,369,988 tons poured in the first five months of 1959 was also a new high for this period, an increase of 74 pct over the 30,625,007 tons made during the same period last year.

Based on the Jan. 1, 1959, capacity rating of 147,633,670 net tons of raw steel annually, steelmaking facilities were used at an average of 92.5 pct of capacity during May. The previous month it was 93 pct, and for the entire five months—87.4 pct.

For S. African RR

The World Bank recently agreed to lend the Union of South Africa \$11.6 million for a railway expansion program.

South Africa's current two-year project includes improvement of 410 miles of line, electrification of 640 miles of track, new construction of 160 miles of branch and suburban lines, and the purchase of 530 locomotives, and a large quantity of rolling stock.



MODEL OL LIGHT



MODEL OM MEDIUM




MODEL OH HEAVY

New Heavy Duty Steel Strapping Tool completes STANLEY Line of "O" Tighteners


Stanley's new OH Tightener is the only heavy duty friction wheel steel strapping hand tool on the market today for use with cold rolled $\frac{3}{4}$ " and $1\frac{1}{4}$ " x .031 and .035 steel strap. This portable, lightweight, high leverage tightener efficiently packages products and containers of every type, size,

shape and weight . . . increasing packaging flexibility. Seals applied behind the tensioning wheel eliminate strap waste.

Strapping Data available from Stanley Steel Strapping, Division of The Stanley Works, Dept. F, 1317 Corbin Ave., New Britain, Conn.

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Gen. Leif J. Sverdrup

Engineer-Soldier at His Best

The list of projects built by Gen. Sverdrup is long and impressive.

Said Gen. MacArthur: "Here is the engineer-soldier at his best."

■ Wherever General Leif J. Sverdrup shows up, there is likely to be a change in the landscape. It might come in the form of a bridge, an airfield, a pipeline, or a gigantic research center. For Gen. Sverdrup is one of the nation's truly outstanding construction engineers.

His career approaches the fantastic. A native of Norway whose family tree is loaded with statesmen, theologians, college professors, and explorers, Gen. Sverdrup's own bough is as sturdy as those of any of his forbears.

Came for the Summer—Forty-five years ago, at the age of 16, Leif came to America to visit a cousin in Minnesota for the summer. "That summer visit isn't over yet," he says.

The youth liked what he saw here, enrolled at Augsburg College. Later he entered the University of Minnesota and earned his B.S. and M.A. in engineering. During summers, he worked as a farm hand to pay his tuition.

He Started on Bridges—When the U. S. entered World War I, he enlisted in the Army and earned his right to American citizenship. After the war, he learned to build bridges working for the Minnesota and Missouri state highway departments.

In 1928, he joined with John I. Parcel, his former professor at the University of Minnesota, and formed a consulting engineering



GENERAL SVERDRUP: He came for a summer and stayed.

partnership. For 10 years they built bridges throughout the Midwest.

Then Came the War—When the Japanese bombed Pearl Harbor in 1941, Gen. Sverdrup happened to be in the Fiji Islands, charting air bases for a new plane ferrying route across the Pacific to Australia. He was immediately commissioned a colonel in the U. S. Army Engineers. In short order, he became a wizard at handling native labor. Before the war was over, he had cut hundreds of air strips out of the South Pacific jungles. During one air raid he was wounded in both legs.

Eventually, he was promoted to Major General and had received

nine decorations including the Distinguished Service Cross. He was with MacArthur during his famous return to the Philippines, was also present at the historic signing of the Japanese surrender aboard the battleship Missouri.

Receives Kimbrough Award—Since the war, two of Gen. Sverdrup's bigger jobs were construction of a \$250 million pipeline in Arabia, and building of the mammoth Arnold Engineering Development Center in Tennessee.

This year, the American Institute of Steel Construction bestowed on him its Lloyd Kimbrough Award—the third man to receive this honor in 31 years.



It actually costs less to get uniform forged quality like this

THIS is an actual unretouched photo of rock bit forgings made from Timken® forging bars steel. It costs less to get this uniform forged quality when the steel is uniform. And Timken steel doesn't vary in structure, chemistry or dimension from heat to heat, bar to bar, order to order. You don't have to interrupt to make costly adjustments when you forge with Timken steel.

We take *extra* quality control steps to make Timken electric furnace fine alloy steel as uniform a steel as you can buy. For example, the Timken

Company was the first U.S. steel maker to use the magnetic stirrer to keep molten alloys equally distributed, work slag constantly and keep temperature uniform. Ours was the first direct-reading spectrometer to insure exact composition down to the instant the furnace is tapped. What's more, The Timken Company's unique method of handling orders individually enables us to target procedures to meet your end-use requirement.

Why not insure a better forged product and save money doing it? Specify Timken fine alloy steel—the

steel that's uniform! The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

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1. Quality that's uniform from heat to heat, bar to bar, order to order
2. Service from the experts in specialty steels
3. Over 40 years experience in solving tough steel problems

TIMKEN[®] *Fine Alloy* STEEL

Why Third Quarter Looks Better

Midsummer misgivings are showing up less and less in business attitudes. It's a big change from only a short time ago.

Inventories are on the rise, but spurting sales prevent any dangerous accumulation—yet.

■ You get the feeling throughout industry that third quarter doubts are a thing of the past. This comes as a sharp change in attitude from a few weeks ago.

The best indication is found where it's most noticeable, in the steel negotiations. A few weeks ago, both sides were negotiating from a "nothing to lose" attitude. They were reconciled to a slow summer with major layoffs anyway.

New Stance—Now that position is a thing of the past and the steel industry is looking forward toward third and fourth quarter business with high hopes, assuming the companies can get a contract before a strike paralyzes the economy.

The reason is simple. Manufacturers have tried to build up inventories to the best of their ability and retailers have also made attempts to hedge.

Inventory Picture—But the facts show that in spite of every incentive, inventories have not been built up to dangerous levels. At the same time, there is no reason to look for a letdown in consumer buying.

Latest Dept. of Commerce studies show that inventories are roughly the same as a year ago, but that sales continue well ahead.

"With sales considerably ahead of a year ago, and stocks the same, business is being carried on with a much lower ratio of stock to sales than a year ago," concludes

Commerce's Office of Business Economics.

Some Concern—You will find individual industries becoming concerned over inventories. Last week it was noted that appliance makers have mixed feelings about sales and inventories (The IRON AGE, June 11, P. 96). And auto inventories are also very high.

These examples are pointed out to underscore the fact that the busi-

ness picture is never entirely clear.

In analyzing the inventory picture, manufacturing and trade inventories gained about \$900 million in April, seasonally adjusted. Not surprising, the metals-using industries showed the biggest gains, indicating some steel and/or nonferrous metals accumulating was possible.

In the trade area, automotive inventories, as reported before, are on the rise and took care of most of the goods-in-stock rise.

Outlook for Tax Cuts Is Dim

■ Hopes for future tax cuts will have to rest on higher revenues and closing present tax loopholes. It's becoming evident that smaller Federal budgets in the future belong in the dream world.

The Administration is warning Congress that there is little prospect now that the nation will ever again be able to get by with spending less than \$80 billion a year. Instead, an upward trend is expected.

Revenues Climb — It's hoped that increased tax collections from booming personal and business income will be able to match continuing higher demands for new Federal revenue.

If business continues at its present level, and Congress doesn't go overboard, the fiscal year beginning July 1 will see income and outgo stabilize at about \$77.8 billion, even without postal rate increases and higher gasoline taxes.

Business Last—The \$1.5 billion to \$2 billion "built-in" budget increase in the succeeding year also could be about balanced by income.

Democratic leaders are going to open a study this fall which they

hope will lay the groundwork for some 1960 cuts by closing various "leaks." Most of these "loopholes" will fall in the business and corporate tax categories.

But even in the remote chance that revenues reach the level that justifies tax cuts, business will be the last to benefit in an election year. First will come individual taxes, then small business.

Freight on the Move

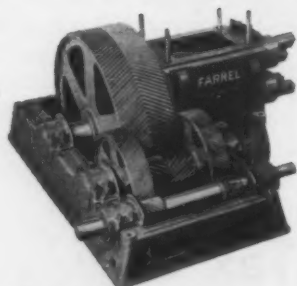
Another indicator: Intercity truck tonnage is running 18.3 pct ahead of corresponding periods a year ago, according to figures of the American Trucking Associations.

But some of the year-ago changes in individual cities reflect changes in local business conditions that are interesting:

New York, up 18.5 pct; Buffalo, up 31.4 pct; Detroit, up 53.2 pct; Pittsburgh, up 27.2 pct; Chicago, up 20 pct; San Francisco, down 8.5 pct; Dallas-Ft. Worth, up 20.6 pct, are some examples.

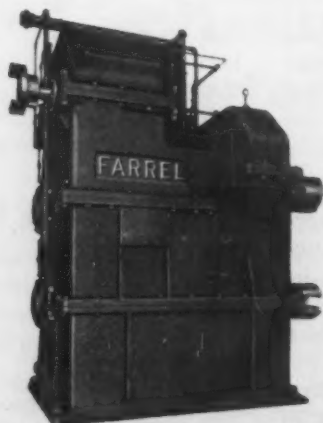
Weekly changes are relatively minor, indicating a comparative plateau in shipping.

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1000 HP Combined Drive and Pinion Stand

Designed to transmit power to a two-high cold brass run-down mill. The first reduction gears are opposed single helical. The second reduction gears and the mill pinions are Farrel-Sykes continuous-tooth herringbone.



150 HP Triple Reduction Unit

The three pairs of continuous-tooth herringbone gears of this special tube mill drive provide a ratio of 113 to 1. A pinion unit is built as an integral part of the drive.

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5500 HP Single Reduction Unit

Herringbone geared reduction unit designed to transmit power to a 134" three-high sheared plate mill, reducing motor speed from 375 to 70.35 RPM.



2000 HP Pinion Stand

21" pinion stand, designed to transmit power to a four-high aluminum sheet mill. Heat-treated, forged steel pinions are continuous tooth herringbone, generated by the Farrel-Sykes process.

Whatever your mill drive requirements, no matter how unusual in design, size or capacity, Farrel will meet them. As in the examples given, each unit is individually engineered for the application.

Each Farrel unit is designed to assure top drive efficiency, plus the strength to withstand the shocks, stresses and wear encountered in continuous, heavy duty service.

Gear drives are made with herringbone, single helical, or a combination of single and double helical gears. Pinions are usually herringbone type, although single helical pinions may be supplied. Gears and pinions are precision-generated by the famous Farrel-Sykes process, assuring accuracy of tooth spacing, profile and helix angle. Result: High efficiency and smooth, quiet operation.

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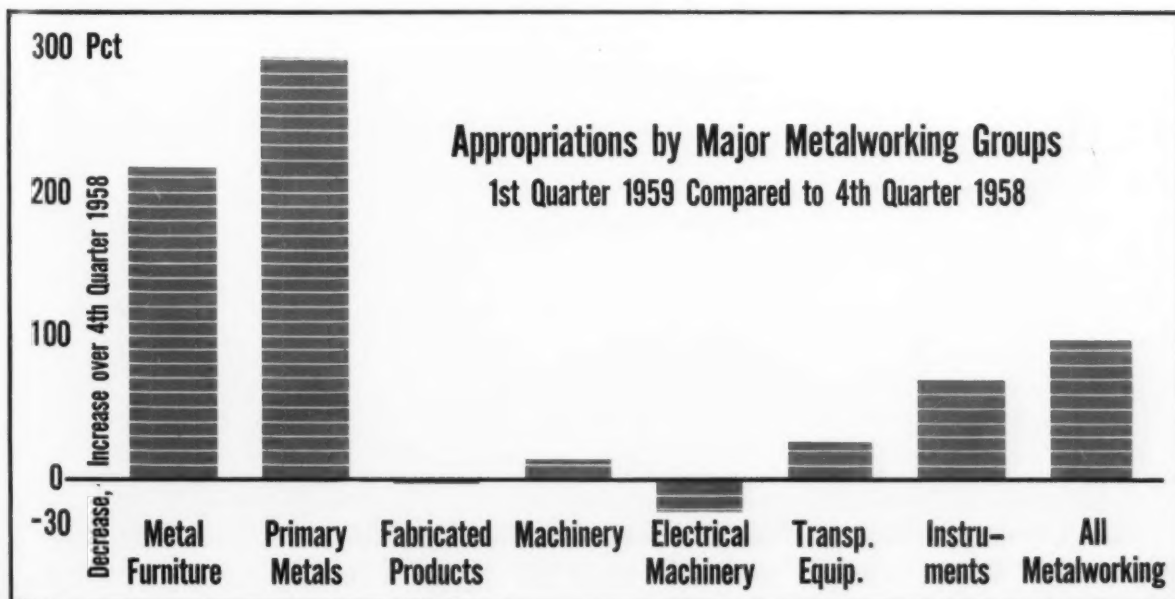
Survey of Metalworking Capital Appropriations

Conducted Quarterly for The IRON AGE

By The National Industrial Conference Board

Metalworking Opens NEW SPENDING DRIVE For Plants and Equipment

Big Jump in Capital Appropriations



How New Capital Appropriations Strengthen Business Uptrend

Nearly every major group in metalworking is adding to its outlays for capital equipment.

Survey shows moderate rise of late last year may turn into a new capital goods boom.

■ A year ago, the steel industry was floundering along at about 60 pct of capacity. Today it is leading the way to a what looks like a new capital goods boom.

While steelmakers were apparently the first to see the need for new capital outlays, others in the metalworking industry are following suit.

In the first quarter of 1959, the hint of new interest in plants and

equipment that was apparent late last year came into full sight. Appropriations by metalworking more than doubled the year-ago rate and almost doubled the previous quarter.

Nearly Up to Peak—From the recession low of the second quarter of 1958, new approvals have more than tripled. More significant for comparison purposes, appropriations climbed almost to the level they held at the same time in 1957, when capital spending was at its peak.

This major advance in appropriations means strong push to future capital outlays extending into early 1960. Since the gain is across the broad front of metalworking, the

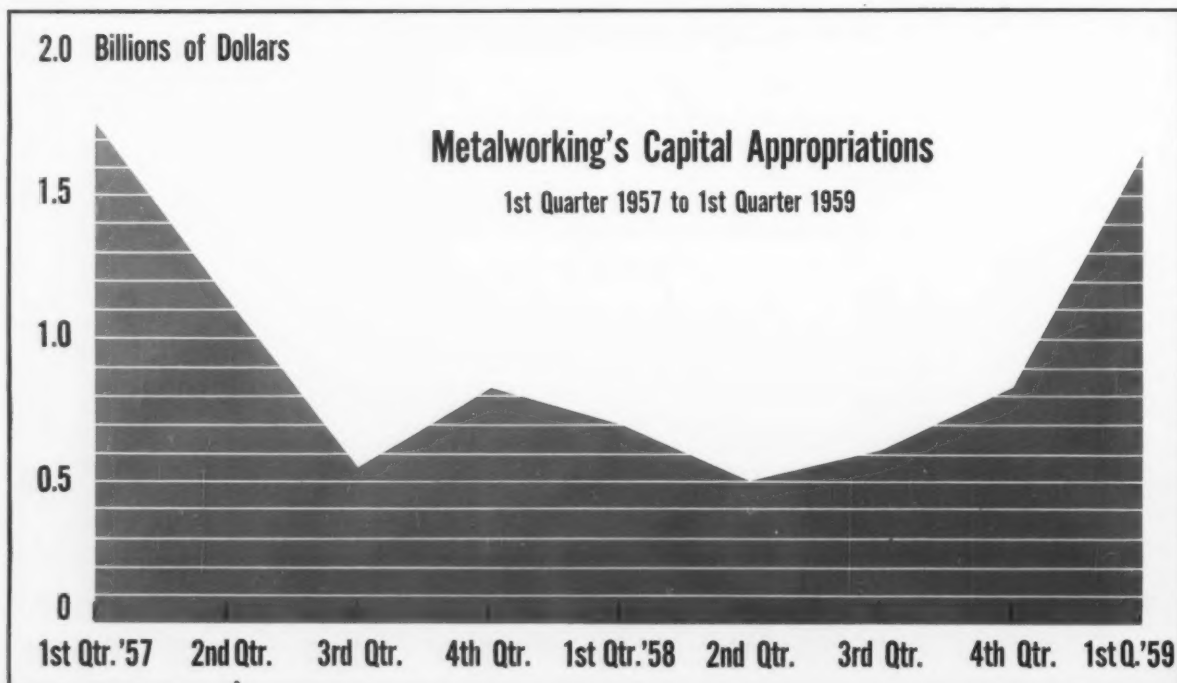
setback in capital spending is now clearly reversed and industry is in a new phase of recovery.

This is the principal conclusion to be drawn from this fourth in a continuing series of surveys of capital appropriations in the metalworking industry. It is conducted for *The IRON AGE* by the National Industrial Conference Board.

Money to Come—The significance of capital appropriations is that it is money authorized, not yet actually spent. It generally indicates funds that will be spent within the next six to twelve months.

Since the outlook for capital spending has been one of the questionmarks in forecasting, this survey of appropriations provides an im-

Are Spending Plans Heading for a New High?



portant element in the business outlook.

In addition to providing an advance look at industry's spending plans, it is a reflection of the optimistic and confident state of mind that is now prevalent in the metalworking industry.

Steel Leads Comeback — Importance of the capital spending intent of the metalworking groups is underlined in two important respects: In the past recession, this broad area of industry was hardest hit. At the same time, this group is most susceptible to the earliest and most abrupt shifts in market demand—capital goods and consumer durables.

In leading the revival in capital appropriations, the steel industry, the major element in the broader Primary Metals category, appropriated more than four times as much in funds for capital spending in the first quarter of this year than in the last quarter of 1958.

Advances General — In actual

cash, the Primary Metal Industries appropriated \$543 million during the quarter, with the blast furnace, steel works, and rolling mills group accounting for the bulk of the spending. (See table, P. 70)

In the first quarter, every major metalworking industry group advanced its appropriations sharply above the year-ago rate with one exception — Transportation Equipment.

In point of number of establishments, the survey shows general agreement in the capital spending uptrend. During that quarter, 57 pct of the cooperating divisions reported capital authorizations higher than the same quarter of 1958. This is a significant improvement in the overall spending attitude.

Not Unexpected — The big jump in authorizations was not entirely unexpected, although the size of the gain, particularly in the steel industry, probably was underestimated.

An early clue to the first quarter upsurge was evident in the leveling

and gradual climb in second half of last year. In the fourth quarter, some improvement and added interest in capital spending resulted in a moderate gain. This is now beginning to be felt among capital equipment suppliers. (See IRON AGE, April 2, 1959)

Profits First — For most metalworking companies, sales and profits began to improve late in 1958 and solid results in the first quarter led to new capital spending discussions.

But there is still the question of why the renewed spending, when few industries are operating at capacity?

Although the survey did not go into intent, it's apparent that most spending is not primarily aimed at adding to mere productive capacity. Instead, it is intended to result in improved manufacturing at lower cost.

Time Interval — In some cases, like the new round of steel expansion, the time interval between ap-

New Appropriations Point to Uptrend

Major Metalworking Groups

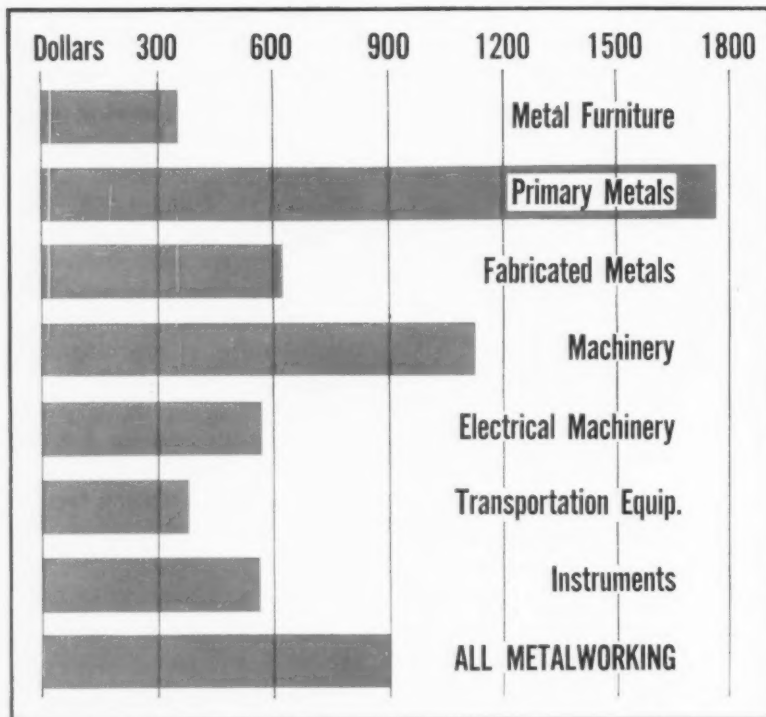
Industry	SIC Code	Capital Appropriations—\$ Millions					Percentage Changes			Appropriations per Workers ¹
		1957	1958	1st Qtr. 1958	4th Qtr. 1958	1st Qtr. 1959	1st Qtr. 1959 over 1st Qtr. 1958	1st Qtr. 1959 over 4th Qtr. 1958	1st Qtr. 1958 over 4th Qtr. 1957	
Metal Furniture.....	25	\$9.7	\$4.1	\$1.5	\$.5	\$1.6	+6 Pct	+216 Pct	+4 Pct	\$357
Primary Metals.....	33	1,086.4	521.9	117.7	138.7	543.0	+361	+291	-35	1,778
Fabricated Metal Products.....	34	184.8	136.2	29.7	48.1	47.2	+60	-2	-29	623
Machinery (exc. Electrical).....	35	568.4	365.1	93.7	137.6	158.6	+69	+15	-5	1,135
Electrical Machinery and Equipment.....	36	205.0	178.9	44.5	68.4	53.6	+20	-22	+12	573
Transportation Equipment.....	37	670.3	418.4	162.6	118.6	150.6	-7	+27	-11	374
Instruments, etc.....	38	39.1	27.8	7.6	8.9	15.1	+98	+70	+13	570
Total Reported².....		2,763.6	1,652.4	457.3	520.9	969.8	+112	+86	-17	817
Total Estimated for All Metalworking³.....		4,293.0	2,658	701	833	1,662	+137	+99	-16	900

Based upon returns from 470 companies reporting 695 separate industry groups.
¹ In dollars per production worker, based on appropriations made from 2nd Qtr. '58 through 1st Qtr. '59 and plant employment of reporting companies in 1957.
² Excludes ordnance and accessories, SIC code 19, and miscellaneous metal manufacturing, SIC code 38.
Source: The National Industrial Conference Board.

³ Estimated for universe described on page 72. This includes metalworking companies with at least one plant of 500 production workers or more in 1957. Calculated by dividing reporting companies' appropriations in each period by the coverage ratio indicated on page 72, and summing the quotients.

Appropriations Per Worker

2nd Quarter '58 through 1st Quarter '59



appropriation and production can run into many months and even years. For example, most of the new programs are to be spread over a period of years. But in other industries, new appropriations will result in immediate spending for equipment that is to be in operation shortly.

In the steel industry, long-range studies have shown the need of greater capacity during the 60's. Furthermore, the recession showed conclusively that companies with the most efficient equipment were better able to weather low operating periods.

Cash Available—Profits began to rise in the third quarter of last year from the recession low. By the first quarter they were far above the year-ago rate. Combined with steadily growing depreciation allowances, they created a larger reservoir of funds to encourage the spending decisions.

Appropriations per worker were also largest in the Primary Metals Group and in the blast furnace and steelmaking subgroup. To avoid distortion, appropriations per worker as shown in the chart and tables are the average over the latest four quarters.

Caution Advised—Survey authors caution against comparing this figure between industry groups because the relationship between capital and labor input varies widely. However, these figures provide a guide to compare your company's appropriation rate with the average in its group.

Some high spots of the survey:

During the first quarter, all of the primary metals industries except the nonferrous smelters and foundries raised their spending sights over the year-ago quarter. Sharp rises over the fourth quarter of 1958 were virtually unanimous, indicating the continuing upward trend.

Gains in appropriations in fabricated metal products are speeding up. Contributing largely are the metal can, cutlery, and metal stampings divisions.

Other Indicators—Recovery was especially strong in nonelectrical machinery. Appropriations continued to forge ahead in every division in the first quarter. The industry as a whole increased its appropriations 69 pct over the first quarter of last year.

Although still reporting lower approvals in the first quarter, the transportation equipment manufacturers reduced their cutbacks. Total appropriations were only 7 pct below a year ago. Motor vehicles and railroad equipment of the divisions improved most between the fourth quarter of 1958 and the first quarter of this year.

Electrical equipment lost its lead in appropriations recovery. Where its gains had been the most spectacular during the fourth quarter, first quarter gains were a comparatively modest 20 pct over a year ago. Manufacturers of radio and TV receivers, communications equipment and miscellaneous electrical equipment were the only ones to improve their rate.

New authorizations in the instruments' industry rose 98 pct between the first quarter of 1958 and the first quarter of this year. Every division raised approvals from the fourth quarter of 1958 to the first quarter of 1959.

In actual appropriations, the metalworking industry authorized \$1,662,000 million in the first quarter, nearly a third of the total by primary metals.

This compares with \$833 million in the fourth quarter of 1958 and \$701 million in the first quarter of last year.

It means that capital goods spending is gaining momentum.

Tables showing the breakdown of metalworking appropriations by 3-digit SIC groupings—P. 70, 71.

How Survey Results Work for You

More Reporting Companies Mean More Reliability

Survey discloses capital spending plans of almost half of the investing and employing done by all manufacturing.

Detailed breakdown by industry sub-groups provides an accurate guide to industry plans.

• Cold statistics show that metal-working plants made decisions in the first quarter of this year to spend nearly 100 pct more in capital appropriations than they did in the final three months of 1958. First quarter appropriations were a full

137 pct over the period a year ago.

What does it mean to you and your company?

Good Indicators—First, this survey covers in fine detail the groups and sub-groups that are the first to sense and react to the most important segments of business.

Second, they account for almost half of the investing and employing done by manufacturing industry.

For these reasons, they provide the best advance indication of changes in capital goods demand.

Not Just Intent — Because the

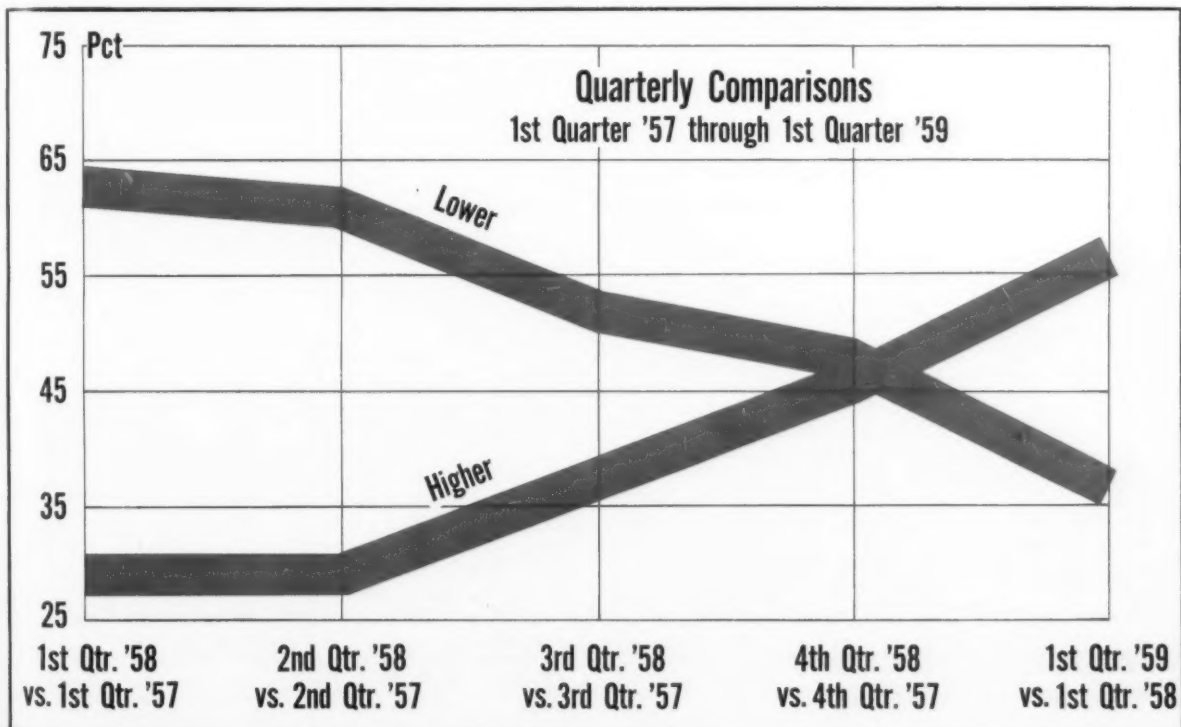
survey reports funds earmarked for spending, they are a more reliable indicator than surveys of intent. The latter, however well meaning, frequently indicate only the state of mind at the time of the survey.

As pointed out in previous surveys, the fine detail is achieved through analysis by principal product in accordance with the three-digit system of the Standard Industrial Classification Manual (SIC).

Broad Base—The base of the survey is 1027 companies, each of which has at least one plant employ-
(Text Continued on P. 72)

Further Proof of Capital Spending Revival

More Divisions Authorize Higher Capital Spending



Primary Metal Industries

Primary Metal Industries		Capital Appropriations—\$ Millions						Pct Change	Pct Change	Pct Change	Appropriations per Worker ¹
		1957		1958				1st Qtr. 1959 over 1st Qtr. 1958	1st Qtr. 1959 over 4th Qtr. 1958	1st Qtr. 1958 over 4th Qtr. 1957	
		4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	1st Qtr. 1958	4th Qtr. 1958	4th Qtr. 1957	
Blast Furnaces, Steel Wks. & Rolling Mills	331	\$94.5	\$62.5	\$71.6	\$136.6	\$105.3	\$468.4	650 Pct	345 Pct	—34 Pct	\$2,523
Iron & Steel Foundries	332	9.7	5.1	3.5	5.0	5.6	9.7	90	75	—47	408
Primary Smelt. Nonferrous	333, 334 ³	46.0	31.8	2.9	14.0	8.6	30.3	—5	254	—31	1,125
Rolling, Drawing, Extruding Nonferrous	335	25.4	14.0	10.4	14.8	15.8	30.9	121	96	—45	894
Nonferrous Foundries	336	2.9	2.4	0.3	0.9	0.2	0.4	—82	141	—16	143
Misc. Primary Metals	339	1.3	1.8	2.2	3.4	3.4	3.4	84	—1	40	558
Total		\$179.9	\$117.7	\$90.8	\$174.7	\$138.7	\$543.0	361 Pct	291 Pct	—35 Pct	\$1,778

¹ In dollars per production worker, based on appropriations from 2nd Qtr. '58 through 1st Qtr. '59.

² Includes secondary nonferrous smelters (SIC code 334). Source: The National Industrial Conference Board.

Fabricated Metal Products

Fabricated Metal Products		Capital Appropriations—\$ Millions						Pct Change	Pct Change	Pct Change	Appropriations per Worker ¹
		1957	1958				1959	1st Qtr. 1959	1st Qtr. 1959	1st Qtr. 1958	
			4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.		4th Qtr.	1st Qtr. over 1958	4th Qtr. over 1958		4th Qtr. over 1957
Industry	SIC Code										
Metal Cans	341	\$14.5	\$7.1	\$8.0	\$11.3	\$18.5	\$12.0	69 Pct	—35 Pct	—51 Pct	\$1,118
Cutlery, Tools, Hardware	342	6.0	0.8	—0.5	1.2	3.9	3.2	313	—17	—87	212
Heating Apparatus (exc. elec.), and Plumbing Fixtures	343	2.5	4.0	2.2	1.8	3.3	3.5	—12	7	60	504
Fabricated Structural Prod.	344	7.4	6.3	8.6	7.3	8.8	6.6	4	—25	—15	1,056
Screw Products & Rivets ..	345	3.5	1.7	1.1	1.7	4.2	1.9	7	—56	—50	609
Stampings	346	2.2	3.9	2.6	6.5	4.5	15.6	300	244	77	549
Coating, & Engraving, Misc. Fabricated Wire Prod.	347, 348	0.6	2.2	—0.4	0.1	0.3	0.9	—57	214	297	100
Miscellaneous Fabricated Metal Products	349	5.2	3.7	4.1	2.8	4.7	3.5	— 5	—25	—29	405
Total		\$41.7	\$29.7	\$25.7	\$32.7	\$48.1	\$47.2	59 Pct	—2 Pct	—29 Pct	\$623

¹ In dollars per production worker based on appropriations from 2nd Qtr. '58 through 1st Qtr. '59.

Source: The National Industrial Conference Board.

Transportation Equipment

Transportation Equipment		Capital Appropriations—\$ Millions						Pct Change	Pct Change	Pct Change	Appropriations per Worker ¹
Industry	SIC Code	1957		1958			1959	1st Qtr. 1959 over 1st Qtr. 1958	1st Qtr. 1959 over 4th Qtr. 1958	1st Qtr. 1958 over 4th Qtr. 1957	
		4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.				
Motor Vehicles & Equip. ²	371, 375, 379	\$143.6	\$100.9	\$42.0	\$36.7	\$46.4	\$95.6	—5 Pct	106 Pct	—30 Pct	\$405
Aircraft & Parts	372	34.1	51.2	26.7	26.6	67.7	45.2	—12	—33	50	342
Ship & Boat Building	373	1.2	7.5	1.4	1.9	3.3	7.7	3	137	512	488
Railroad Equipment	374	3.7	3.0	1.1	0.9	1.3	2.1	—28	67	—21	205
Total		\$182.6	\$162.6	\$71.1	\$66.1	\$118.6	\$150.6	—7 Pct	27 Pct	—11 Pct	\$374

¹ In dollars per production worker based on appropriations from 2nd Qtr. '58 through 1st Qtr. '59.

² Includes motorcycles, bicycles and parts, and transportation equipment, not elsewhere classified, SIC codes 375 and 378.

Source: The National Industrial Conference Board.

Electrical Machinery

Electrical Machinery		Capital Appropriations—\$ Millions						Pct Change	Pct Change	Pct Change	Appropriations per Worker ¹
		1957	1958				1959	1st Qtr. 1959 over 1st Qtr. 1958	1st Qtr. 1959 over 4th Qtr. 1958	1st Qtr. 1958 over 4th Qtr. 1957	
			4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	1st Qtr. 1958	4th Qtr. 1958		4th Qtr. 1957
Industry	SIC Code										
Elec. Transmission Equip..	361	\$9.6	\$8.9	\$5.7	\$3.3	\$17.4	\$8.1	—9 Pct	—54 Pct	—7 Pct	\$721
Electrical Ind. Apparatus..	362	6.8	8.7	6.8	3.5	12.4	9.0	4	—28	27	506
Household Appliances.....	363	3.4	7.2	3.0	4.5	3.3	4.8	—33	49	111	536
Electric Lighting & Wiring Equipment.....	364	4.0	2.3	1.4	1.0	5.3	2.8	23	—47	—43	253
Radio & TV Receivers....	365	2.0	0.8	1.2	0.7	1.6	1.1	39	—30	—59	180
Communication Equipment	366	6.1	8.5	10.2	4.8	6.3	10.0	19	60	39	615
Electronic Components....	367	5.5	7.2	9.6	8.7	21.1	16.4	128	—22	31	956
Misc. Electrical Equipment	369	2.6	1.0	0.7	0.6	1.0	1.3	32	27	—62	442
Total		\$39.9	\$44.5	\$38.7	\$27.2	\$68.4	\$53.6	20 Pct	—22 Pct	12 Pct	\$573

¹ In dollars per production worker based on appropriations from 2nd Qtr. '58 through 1st Qtr. '59.

Source: The National Industrial Conference Board.

Nonelectrical Machinery

Nonelectrical Machinery		Capital Appropriations—\$ Millions						Pct Change	Pct Change	Pct Change	Appropriations per Worker ¹
		1957	1958				1959	1st Qtr. 1959 over 1st Qtr. 1958	1st Qtr. 1959 over 4th Qtr. 1958	1st Qtr. 1958 over 4th Qtr. 1957	
			4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	1st Qtr. 1958	4th Qtr. 1958		4th Qtr. 1957
Industry	SIC Code										
Engines & Turbines	351	\$9.9	\$5.9	\$3.2	\$3.3	\$8.1	\$22.8	288 Pct	181 Pct	—41 Pct	\$687
Farm Machinery & Farm Tractors	352	7.2	6.9	10.0	19.2	13.9	19.2	178	39	—4	1,172
Construction, Mining, Handling Equipment.....	353	6.7	26.2	5.4	5.4	57.6	33.2	27	—42	289	1,312
Metalworking Machinery & Equipment ²	354, 359	7.3	6.5	3.8	3.2	5.7	9.0	38	59	—11	332
Special—Ind. Machinery	355	7.4	13.1	15.0	7.3	9.1	28.0	115	208	77	3,113
General Ind. Machinery & Equipment.....	356	10.2	15.8	6.6	6.7	10.1	24.8	57	148	54	797
Office & Store Machines	357	46.8	18.0	18.9	19.1	31.2	19.2	6	—39	—61	1,860
Service Industry Machines	358	2.6	1.3	5.0	1.7	1.9	2.3	72	17	—50	565
Total		\$98.3	\$93.7	\$67.9	\$65.9	\$137.6	\$158.6	69 Pct	15 Pct	—5 Pct	\$1,135

¹ In dollars per production worker based on appropriations from 2nd Qtr. '58 through 1st Qtr. '59.

² Includes miscellaneous machinery, SIC 359.

Source: The National Industrial Conference Board.

Instruments

Instruments		Capital Appropriations—\$ Millions						Pct Change	Pct Change	Pct Change	Appropriations per Worker ¹
		1957	1958				1959	1st Qtr. 1959 over 1st Qtr. 1958	1st Qtr. 1959 over 4th Qtr. 1958	1st Qtr. 1958 over 4th Qtr. 1957	
			4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.		4th Qtr.	1st Qtr.	4th Qtr.		4th Qtr.
Industry	SIC Code										
Laboratory, Scientific & Engineering Instruments	381	\$0.5	\$2.1	\$0.9	\$0.8	\$2.2	\$5.3	157 Pct	138 Pct	342 Pct	\$584
Measuring & Controlling Instruments	382	2.3	3.5	2.2	4.4	3.7	5.9	68	59	53	627
Other ²	383, 384, 385, 386, 387	4.0	2.0	1.7	1.2	2.9	3.9	91	33	—49	487
Total		\$6.7	\$7.6	\$4.9	\$6.4	\$8.9	\$15.1	98 Pct	70 Pct	13 Pct	\$570

¹ In dollars per production worker based on appropriations from 2nd Qtr. '58 through 1st Qtr. '59.

² Includes optical instruments, surgical instruments, ophthalmic goods, photographic equipment and watches, clocks and clock operated devices, SIC codes 383, 384, 385 and 386.

Source: The National Industrial Conference Board.

Survey Coverage Increases

All companies in the industries listed below, with plants of 500 or more plant workers, were queried. They account for about two-thirds of the total employment and buying power in the metalworking industry. The last column shows the percentage of production workers employed by the companies cooperating in this survey.

Industry	SIC Code	Production Workers, Thousands Companies With Plants of 500 or more	Production Workers, Thousands Cooperating Companies	Cooperating Companies Pct of Total
Metal Furniture	251, 252, 253, 254, 259	31	12	38 Pct
Blast Furnaces, Steel Works, Rolling Mills	331	592	310	52
Iron and Steel Foundries	332	82	58	71
Primary Smelting Nonferrous	333, 334	55	50	90
Rolling, Drawing, Extruding, Nonferrous	335	115	80	70
Nonferrous Foundries	336	19	13	68
Misc. Primary Metals	339	37	22	61
Metal Cans	341	47	45	94
Cutlery, Hand Tools, Hardware	342	55	36	67
Heating Equipment (except electrical), Plumbing Fixtures	343	33	21	64
Fabricated Structural Products	344	61	30	49
Screw Products & Rivets	345	26	15	57
Stampings	346	76	53	70
Miscellaneous Coating, Engraving; Wirework & Wire Springs	347, 348	21	10	48
Mis. Fabricated Metal Products	349	55	37	68
Engines and Turbines	351	73	54	75
Farm Machinery & Farm Tractors	352	61	35	58
Construction, Mining, Material-Handling Equipment	353	118	77	66
Metalworking Machinery and Equipment	354, 359	107	65	61
Special Industry Machinery	355	48	19	40
General Industrial Machinery and Equipment	356	88	60	69
Office and Store Machines	357	76	48	62
Service Industry Machines	358	39	19	50
Electrical Transmission Equip.	361	90	48	53
Electrical & Industrial Apparatus	362	134	63	47
Household Appliances	363	97	44	45
Electrical Lighting & Wiring Equipment	364	55	30	54
Radio & TV Receivers	365	70	26	37
Communication Equipment	366	113	51	45
Electronic Components	367	95	58	61
Misc. Electrical Equipment	369	27	8	30
Motor Vehicles & Equipment	371, 375, 379	636	544	86
Aircraft & Parts	372	529	486	92
Ship & Boat Building	373	63	29	47
Railroad Equipment	374	43	26	61
Laboratory, Scientific & Engineering Instruments	381	41	16	39
Mechanical & Control Instruments	382	41	26	64
Other Instruments	383, 384, 385, 386, 387	78	20	26
Total		4,022	2,646	66 Pct

Based upon returns from 470 companies reporting 695 individual industry codes. Employment figures based on Iron Age Census data, 1957. Figures in last column calculated from unrounded data. A total of 1151 plants with 500 or more workers reported.

SOURCE: The National Industrial Conference Board.

(Continued from P. 69)

ing 500 or more production workers. This group operates 1422 establishments, of 2076 plants.

This study is the result of 470 companies reporting for 695 divisions, and includes the activity of 1151 plants.

Appropriation figures in this survey differ from earlier survey reports because in the early stage of a new survey the size of the sample may vary.

More Reliable—The number of the companies reporting this quarter increased from 435 to 470. The number of divisions rose to 695, a gain of 47. Each gain increases reliability of the sample. For each change, however, appropriation figures are recomputed from the initial quarter so that the tables are based on an identical set of companies.

With all groups but one showing an advance over their year-ago rate, the survey shows the significant change in attitude toward spending that metalworking has undergone since the depths of the recession.

In the first half of 1958, every major metalworking industry was appropriating at a rate lower than a year earlier, accounting for the sag in capital goods orders through the year. In the third quarter, three industries raised their appropriation sights and in the fourth quarter the number rose to four.

Now, six major metalworking groups show increases over a year, giving every indication that new spending for capital goods will continue to add to the present high levels of business.

The change in attitude is significant in that few economists looked for anything better than a mild rise this year.

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Why Big Cars Will Get Smaller

Consumer Preference Swings to Economy Features

The low-priced-three and many medium-priced models will begin downgrading in 1960.

They're losing too much of the market to small car producers.

—By H. R. Neal.

Only a few years back the auto industry was in a race to see who could market the longest car for a given price class. Overhanging trunks took on the appearance of the balcony used in Romeo and Juliet.

The famed low-priced-three grew right along with their larger, more expensive brethren—in price as well as size. Then, some Anglo, Nordic, and Gallic types started merchandising pocket-size transportation with the pitch: Why buy a Lawson sofa when a camp-stool will do?

Upgrading Theory Backfires— Lawson sofas have continued to sell, but so have the camp-stools. To off-set sales lost to the camp-stool set, the low-price line manufacturers dressed up their models—offering just about all the trappings found in more expensive lines. The premise: When the customer has more money (the expanding national economy), he naturally wants better and bigger things. He'll "upgrade" his purchases. Carrying this a step further, the medium price class offerings of the auto companies appeared to be a good bet to boom.

But inflation has taken its toll, and it turns out that a number of the traditionally trustful and predictable customers have decided they want more things and better

things, but not necessarily bigger things.

Other Products Compete—Today's buyer of medium price products finds he can get fins and finery, with a few labor-saving devices thrown in, for the same price he pays for distinctive fins and finery. And he has money left over to indulge in such whimsies as boats, swimming pools, power lawn mowers, air conditioners, or to pay his taxes.

Manufacturers and merchandisers of the distinctive fins and finery have found themselves losing more and more customers to the manufacturers and merchandisers of

plain, everyday fins and finery.

Market Tug-of-War—In the first quarter of this year the medium price class automobiles captured 25 pct of new car sales. In the same period of 1958, the year of the cautious buyer, they had slightly more than 29 pct of the buyers.

Low-price car sales accounted for 61.9 pct of the total, up from last year's 60.6 pct showing. But the famed low-price three have actually dropped to 54.3 pct from last year's 57 pct. They've undoubtedly picked up sales from the medium lines, but they have, in turn, lost more sales to the camp-stool set and a couple of others whose love-

Fit for a Queen, Exclusively



ROYAL RIDE: This Cadillac limousine was built by General Motors of Canada for use by Queen Elizabeth II during her Canadian visit, June 18-August 1. A plexiglass canopy will shield occupants in rear seat if it rains.

seats have caught on.

More Overlapping Models— Love-seats and camp-stools are taking about 17 pct of sales, a year ago it was 9.6 pct. Not wishing to see a good thing get away and figuring that camp-stools might be a little rough on the average, soft American, low price manufacturers recently admitted they were adding love seats to their lines.

More of this is calculated to improve the bargaining position of the medium price lines, so they're following the move of the low price leaders, although modified somewhat.

Dodge, Plymouth Split—Dodge has announced its dealers will drop duals with Plymouth in 1960. In its place they'll handle a Plymouth-size Dodge called the Dart. It will have the 118 in. wheelbase of present Plymouths, but will look like a Dodge.

It will have a slightly larger version of the new six-cylinder engine programmed for the Valiant, Plymouth's love-seat size vehicle. (Ply-

mouth will use the larger engine for its six-cylinder models also.)

Like the Valiant, it will start off with an iron engine block, switching to aluminum later in the year. And it will be priced right along with Plymouth and the other interlopers to the medium price market.

Downgrading Will Spread—The move isn't without precedent, however. De Soto introduced a new series in 1957, the Firesweep, built by Dodge on its 122 in. wheelbase. And Chrysler downgraded its Windsor series in 1958 to the same wheelbase. Standard De Soto and Chrysler wheelbase is 126 in.

While the several Chrysler Corp. divisions are the first of the medium price class to shrink the size of models in order to gain a more favorable price relationship, they won't be the last.

Edsel to Change—Ford will pull the same trick in 1961. The Ford approach is even more drastic. It's shrinking an entire medium price

Automotive Production

WEEK ENDING	CARS	TRUCKS
June 13, 1959	127,523	27,685
June 6, 1959	125,186	27,241
June 14, 1958	78,163	17,403
June 7, 1958	73,696	16,191
TO DATE 1959	2,978,681	591,368
TO DATE 1958	1,056,769	419,225

*Preliminary

Source: Ward's Reports

line below even the size of the Ford.

The 1960 model Edsels will remain the same size as the Ford, as is the present case. In 1961 it will be an entirely different car except for the name. The wheelbase will be shortened to 114 in., from the present 118 in. Length will be cut from the present 211 in. to about 195 in.

GM's Plans — General Motors also has a shorter wheelbase model in the works for 1961. With different dressings, it will probably be offered by Buick, Oldsmobile and Pontiac. It is expected to be powered by a front-mounted, liquid-cooled V8 engine with an aluminum block.

The Bull of the Woods



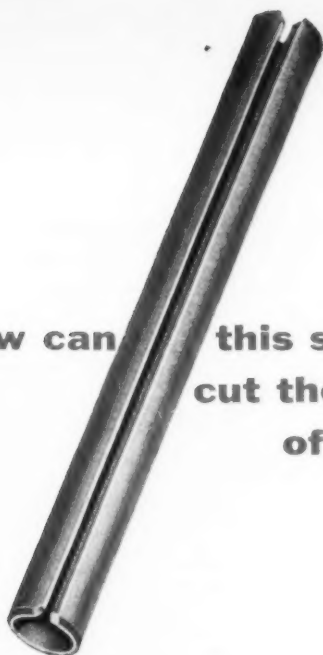
Detroit to Get 1960 Auto Show

For the first time in its 60-year history, a National Automobile Show will be held outside of New York City. The 43rd industry show, only the second since the end of WW II, will be held in Detroit from Oct. 15 to 23, 1960.

The show will also serve as the dedication event for Detroit's Cobo Hall, the city's new exhibit building now under construction. The building has 400,000 sq ft of exhibit space.

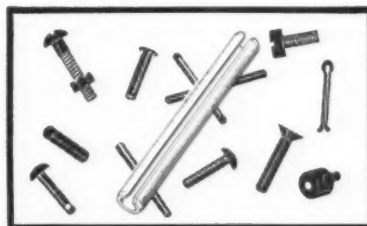
Nearly 300,000 sq ft is on one floor and is practically free of pillars or other structural members. The first auto show was held November 3-10, 1900, in the old Madison Square Garden and offered exhibitors only 6000 sq ft.

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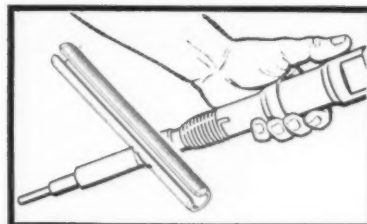
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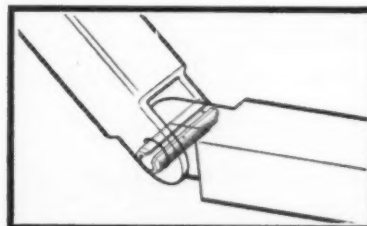
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Rollpin simplifies product maintenance

Only a drift pin or standard punch is required to remove a Rollpin. The slotted tubular shape and the spring action principle do not damage hole walls or enlarge the original hole diameter. Consequently the same pin is easily re-inserted and can be used again and again. Mail our coupon today for the complete Rollpin story.



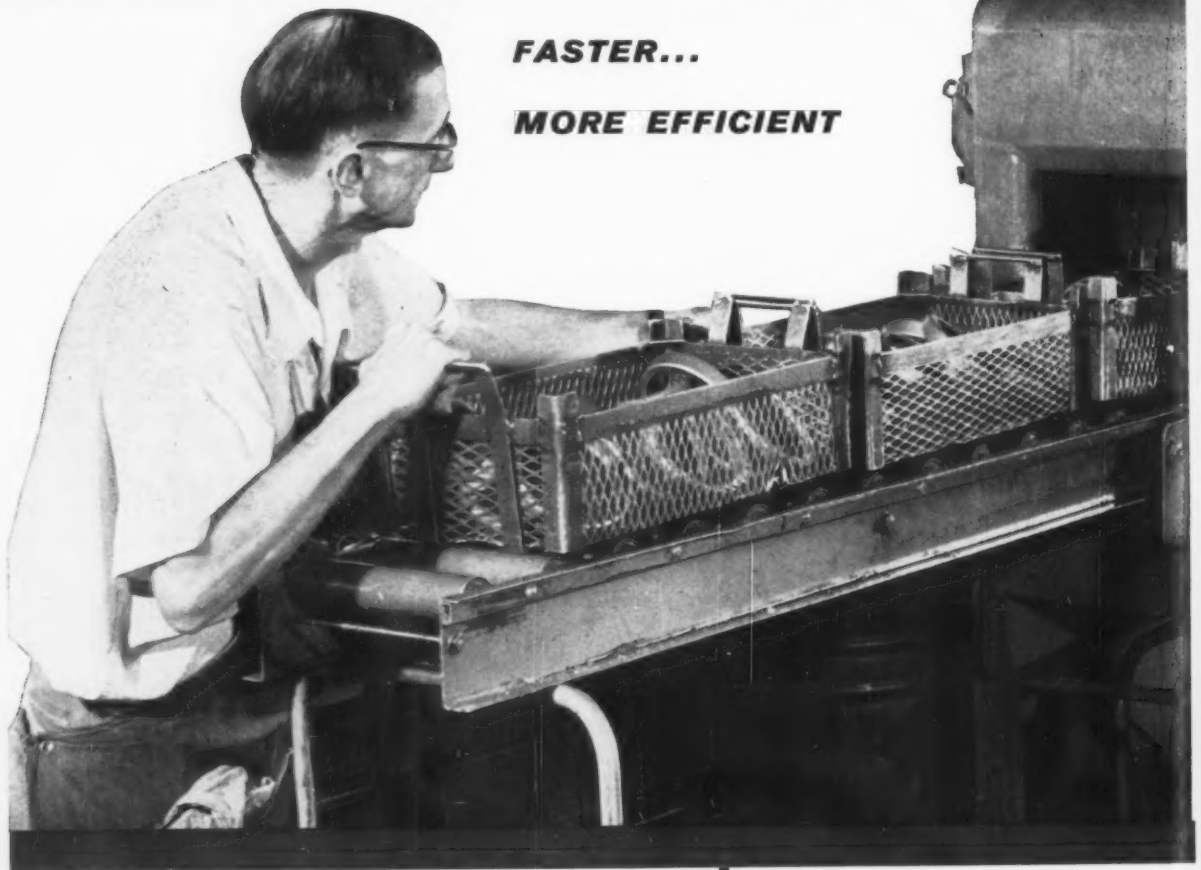
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A Chink in Our Air Defense?

Critics Line up to Snipe at the Pentagon Plan

It looks like Defense Chief McElroy will have tough going when he takes his air defense plan to Congress for approval.

Critics are saying it leaves U. S. too vulnerable to missiles.
—By G. H. Baker.

■ Getting Congress to approve an over-all air defense plan for the nation is going to require strong selling by the Defense Dept.

That was underscored again last week as Defense Secretary McElroy's air defense chart was awaited on Capital Hill. There were strong indications the Pentagon plan would not satisfy the military services. And the services, in turn, were believed ready to urge a fight in Congress on their pet weapons projects.

What Is Expected—A defense plan using both interceptor aircraft, and Air Force and Army missiles was expected from Mr. McElroy (The IRON AGE, June 4, P. 94). But he was expected to recommend tapering off spending for both the Air Force Bomarc and the Army Nike-Hercules.

This probable proposed reduction in funds for the missiles would reflect the basic weakness of both weapons: Neither is designed to destroy ballistic missiles. The Bomarc and Hercules, like manned interceptors, are intended to provide protection against hostile aircraft, only.

Defense against enemy bombers would be handled, in turn, by the interceptors, then the Bomarc, and finally the Hercules, under the expected Pentagon plan. The two missiles would complement each other, with the Bomarc being used

at ranges up to 400 miles and the Hercules to 100 miles.

Wanted—Still lacking is an anti-missile defense weapon of proven value. The Army and a civilian contractor team are working on the Nike-Zeus, an anti-missile missile which requires extensive development and testing.

Contractor team for this weapon is Western Electric Co., the prime contractor; Bell Telephone Laboratories and Douglas Aircraft Co.

Court Defines "Union"

Employee committees which discuss mutual problems with management, but do not bargain for wages and hours are still unions within the meaning of the present federal labor law, the U. S. Supreme Court rules.

As legal unions, these committees are subject to various restrictions

and controls and can be charged with unfair labor practices, the high tribunal says.

The Issue—The case involved the Southwestern Division of Cabot Carbon Co. and Cabot Shops, Inc., Pampa, Tex. Since World War II, the firm has handled grievances on such issues as safety, efficiency, and conservation of materials through employee committees.

These committees were challenged as an unfair labor practice by the International Chemical Workers Union (AFL-CIO). The National Labor Relations Board ruled the committees acted as unions and came under the Taft-Hartley law. They violated the Taft-Hartley law by interfering with its administration, the Board said. A circuit court of appeals reversed the NLRB, but the Supreme Court agreed with the Board.

Is That Trip Deductible?

Deductible Living—The Internal Revenue Service is cracking down on businessmen's "tax-paid vacations" and other expense account high living.

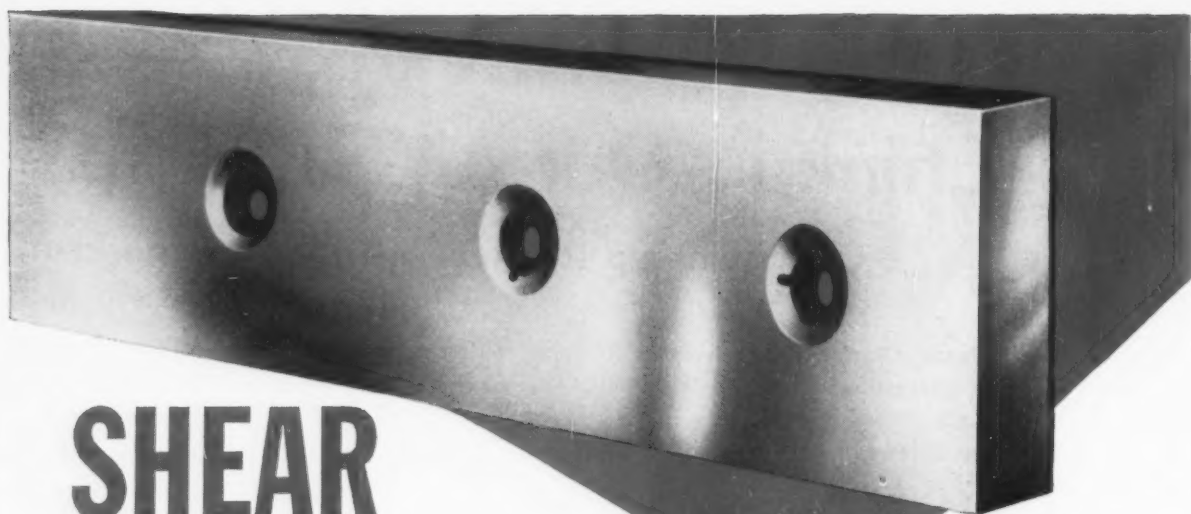
Tax agents are making it clear they "view with a jaundiced eye" taxpayers who claim tax deductions for "purported business trips which in fact represent vacations at resort hotels, hunting trips, and attendance at sporting events."

The IRS agents will check closely amounts claimed for the cost of club dues, entertainment, company-supported automobiles, yachts, airplanes, hunting lodges, and beach

cottages "to make certain they qualify as bona fide tax deductions."

Won't Be Short Changed—"We do not intend to permit tax abuse by a relatively few who attempt to short-change Uncle Sam," IRS Commissioner Dana Latham warns.

"Our self-assessment system of taxation is the best yet devised, but I feel strongly that the surest and quickest way to undermine public confidence in our system would be to fail to see that each and every person pays his fair share under the law," the top tax collector adds.



SHEAR KNIFE

SLITTER KNIFE

SIMONDS Has the Right One **for Your Job**



If you use SHEAR KNIVES... single or four edge... there's a Simonds Shear Knife exactly right for your application.

And, if you use SLITTER KNIVES, there's a Simonds "Red Streak" Slitter Knife just right for the exact kind of metal you're slitting.

Both of these quality Simonds products are engineered to give you maximum performance. For example, Simonds Shear Knives are heat treated in atmospherically controlled furnaces to insure exactly the right temper and hardness for the desired application. And, each knife is precision ground and drilled to exact machine specifications.

ALL of Simonds Slitter Knives are forged for

maximum strength and wear resistance. They are precision ground to close tolerances and feature a low micro-inch surface finish. Hardened and ground Spacing Collars are also furnished as "fitting" companions for the Knives.

Heat treated Separator Discs, made from Simonds Alloy-Steel, resist wear, stay flat, last for years.

Get full details on these top performers from your nearest Simonds Factory Branch—ask for Bulletins S-20 and S-65.



Factory Branches in Boston, Chicago, Shreveport, La., San Francisco and Portland, Oregon
Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y., Heller Tool Co., Newcomerstown, Ohio
Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada

Turbines Take to the Highway

Lightweight Model Will Be Tested on Autos

Boeing has a gas turbine that is 300 hp, weighs only 325 lb.

They'll test in next year in a racing car. Some say they are road testing it already.—By R. R. Kay.

■ You may have a gas turbine in your car sooner than you think.

Boeing Airplane Co. makes a turbine engine rated at 300 hp. It weighs only 325 lb.

In Try-Out—Frank Kurtis, dean of American race car designers, has a car for it. He's working with Boeing to use the engine in the 1960 Indianapolis 500-mile race. There's a good chance the car will show up at the track next Memorial Day.

Boeing has made 700 gas turbines. It looks as if the company is keen on getting into the passenger car field—if the engine proves out at the Speedway.

Meanwhile, the rumor is Boeing

is trying out one of its engines in a Thunderbird.

What Makes it Promising—The automobile industry knows many innovations first appeared in Indianapolis race cars. The size and weight of Boeing's engine, and its price in volume production make it an intriguing bet for tomorrow's cars.

In fact, the company is ready for production on an advanced version. This engine, Boeing claims, "is projected for direct competition with conventional power in the commercial market."

The company says helicopter, marine, and other prime-mover users are eyeing the turbine engine with great interest. There are wide commercial and military uses.

Outlook Is Good

"The long-run outlook is certainly for continued industrial development of the Farwest." That's

what Dr. Clark Kerr says. He's president of the University of California.

Reporting to the U. S. Dept. of Labor, he admits there is still heavy dependence on military hardware. But other types of manufacturing are certainly on the rise.

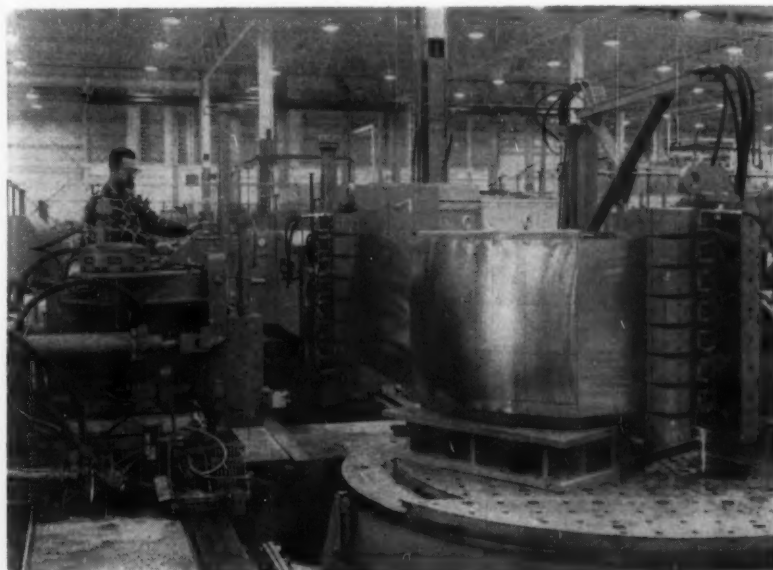
The big jump in population, Dr. Kerr says, has beefed up the construction, consumer goods, and trade and service industries.

Building Boom

California's residential and industrial building is in high gear.

In Los Angeles \$285 million was authorized for the first five months of this year. That's \$32 million above the same period last year.

In San Francisco some \$290 million in contracts was awarded for the first quarter. That's a 28 pct gain over 1958. About \$120 million of it is going into 331 factory projects.



Stretches Stainless For the Atlas

■ This 93-ton radial draw former recently put into operation by the Convair Div., General Dynamics Corp., San Diego, will stretch a 20-ft sheet of stainless steel that is thinner than a dime, by as much as 18 in. And it forms special contours. The \$365,000 machine is now turning out skin sections for the Atlas intercontinental ballistic missile. It can make a single part where several pieces had to be welded together formerly.

...an example of Automatic Production by Greenlee...



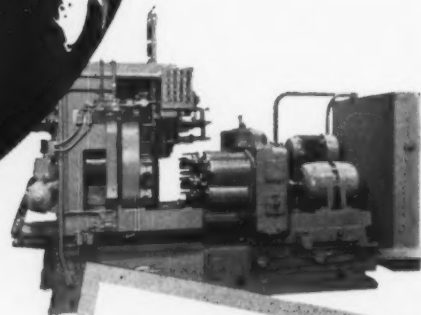
700 malleable iron pipe fittings an hour...

The Greenlee 5 station, horizontal, automatic indexing machine shown above was designed and built for high-production machining of malleable iron pipe fittings. The pipe fittings are loaded, four at a time, indexed and machined at the rate of 576 to 712 pieces an hour, depending on size. The machine accommodates five different sizes of fittings.

- STATION 1 — automatic load
- STATION 2 — bore and rough counter-bore
- STATION 3 — finish counter-bore and chamfer
- STATION 4 — tap
- STATION 5 — automatic unload

Let a Greenlee representative show you the modern Greenlee approach to automatic production.

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- Die Casting Machines
- Trim Presses

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Numerical Controls for Job Lots

GE Shows How With "Flexible Automation"

Numerical controls perform multiple functions at GE's Large Steam Turbine-Generator Dept.

System enables department to automate progressively, starting with key operations, then to other areas.—By E. J. Egan, Jr.

■ As the benefits of numerical control become clearer, it's easier to justify expenditures for setups to take over many different machining chores. The best part about it is that there's choice of system to cope with problem jobs as they arise.

To see how it applies in a large job shop, take a look at General Electric's Large Steam Turbine-Generator Dept., Schenectady, N. Y. Just placed in service is a multi-million dollar array of automated machine tools.

Stress Versatility—Key to efficiency in producing tailor-made parts for steam turbine generators ranging up to ½-million kw is the versatility of advanced electronic control systems. A simple change of tape reel or deck of business cards switches production from one component design to another. From this type of versatility springs the term "flexible automation," an economical approach to automating small lot production.

As it is in many industries, electric power apparatus manufacturers are under fire to keep the cost of their products in line. So it takes shrewd judgment to select and develop the best tools for the job, while having to justify such capital expenditures.



VITAL SHAPING: Numerical control guides cutting head on new Ex-Cell-O profile miller to shape more efficient turbine buckets at GE plant. R. H. Wilke (left) watches as H. R. Durham checks set of cutter.

Take Best Choice—Speaking at the unveiling of the new machine tools last week, W. W. Kuyper, Manager of Manufacturing Engineering, stressed: "It is often easy to justify financially a second best choice, but the adoption of anything but the best choice will eventually weaken the business. Further, the equipment which is procured must be the best for the specific circumstances, not for idealized circumstances that do not exist."

The flexible concept has allowed the department to automate progressively, starting with key operations and moving gradually into other areas. Lead time between

completion of engineering drawings and production has been trimmed to the bone.

As an example, a numerically controlled milling machine turns out extruded copper conductor bars just 45 minutes after a simplified engineering drawing has been completed and programmed on cards.

This job formerly required 16 weeks of lead time and 60 man-hours of production time. Both numerical positioning control and numerical contouring control systems for the new machines were engineered by General Electric's Specialty Control Dept., Waynesboro, Va.

INDUSTRIAL BRIEFS

Defense Contract—Westinghouse Electric Corp.'s Aircraft Equipment Dept., Lima, O., received an \$11 million production contract from Convair Div. of General Dynamics Corp. Westinghouse will manufacture electrical power generating systems for the Air Force B-58, a supersonic bomber.

Subsidiary to Division—Potter & Brumfield, Inc., presently a subsidiary of American Machine & Foundry Co., will become an AMF division effective June 29. The company's name will be changed to Potter & Brumfield Div. of American Machine & Foundry Co.

Armco Drainage GHQ—Armco Drainage & Metal Products, Inc. is constructing a new office building to house the 130-man headquarters staff of the company in Middletown, O. The new Armco Drainage headquarters building will be the first of three to be erected on a site near the general offices of the parent company.

Aircraft Control Research—A \$354,000 Air Force contract to develop a hydraulic control system capable of withstanding the intense "heat barrier" of aircraft flying at 4,500 miles per hour has been awarded to Republic Aviation Corp.



"Besides running the hundred in 9.8 seconds, what can you do?"

Pennsalt Service—A complete metal processing service, ranging from the design, installation and service of a variety of metal preparation and finishing machines to the compounds and chemicals themselves, is now being offered to the industry by Pennsalt Chemicals Corp., Philadelphia.

Goodyear Expansion—A multi-million dollar expansion program which will more than double Goodyear Tire & Rubber Co.'s present vinyl flooring and counter top production will be started in Akron, O. The program will be carried out at the subsidiary Goodyear Aircraft Corp.'s Plant B site of the company's present manufacturing facilities for vinyl film and flooring products.

Ore Assn. Directors—Three new directors have been elected by the American Iron Ore Assn. They are: C. H. Dewey, Republic Steel Corp.; C. B. Jacobs, Inland Steel Co.; and R. Q. Archibald, North Range Mining Co.

Wheeling at Philadelphia—Wheeling Corrugating Co. will open its new Philadelphia Metal Culvert Shop this month at Southampton, Pa. The installation has facilities to fabricate and furnish all types of corrugated metal culvert pipe. The plant will serve the eastern area of the U. S.

Scrap Yearbook—The Institute of Scrap Iron & Steel Inc. has issued its '59 Yearbook, containing statistics on the iron and steel scrap industry. The Yearbook is available from the Institute, 1729 "H" St., N. W., Washington 6, D. C.

Land Purchase—Airborne Instruments Laboratory Div. of Cutler-Hammer, Inc., has purchased the 493,000 sq ft Fairchild Engine Div. plant at Deer Park, Long Island. Sale price for the plant and about 100 acres of the 386-acre site owned by Fairchild was not disclosed. Airborne also obtained an option on an additional 20 acres of land.

GE Plans Plant—General Electric is planning for a commercial plant for the production of Lexan polycarbonate resin. A site has been selected on the Ohio River near Mount Vernon, Ind. Engineering plans for the plant are being completed and it is expected that orders for the structural steel will be placed shortly.

Melt Shop—Firth Sterling Inc., has begun construction of new melting facilities and a new building to house its newly acquired Hopkins (Kellogg) Process. The building is located at Firth Sterling's McKeesport, Pa. plant site.

Isotope Survey—Nuclear Science & Engineering Corp., Pittsburgh, and The American Iron & Steel Institute, will begin a survey program to study potential applications of radioisotopes and nuclear techniques to the iron and steel industry.

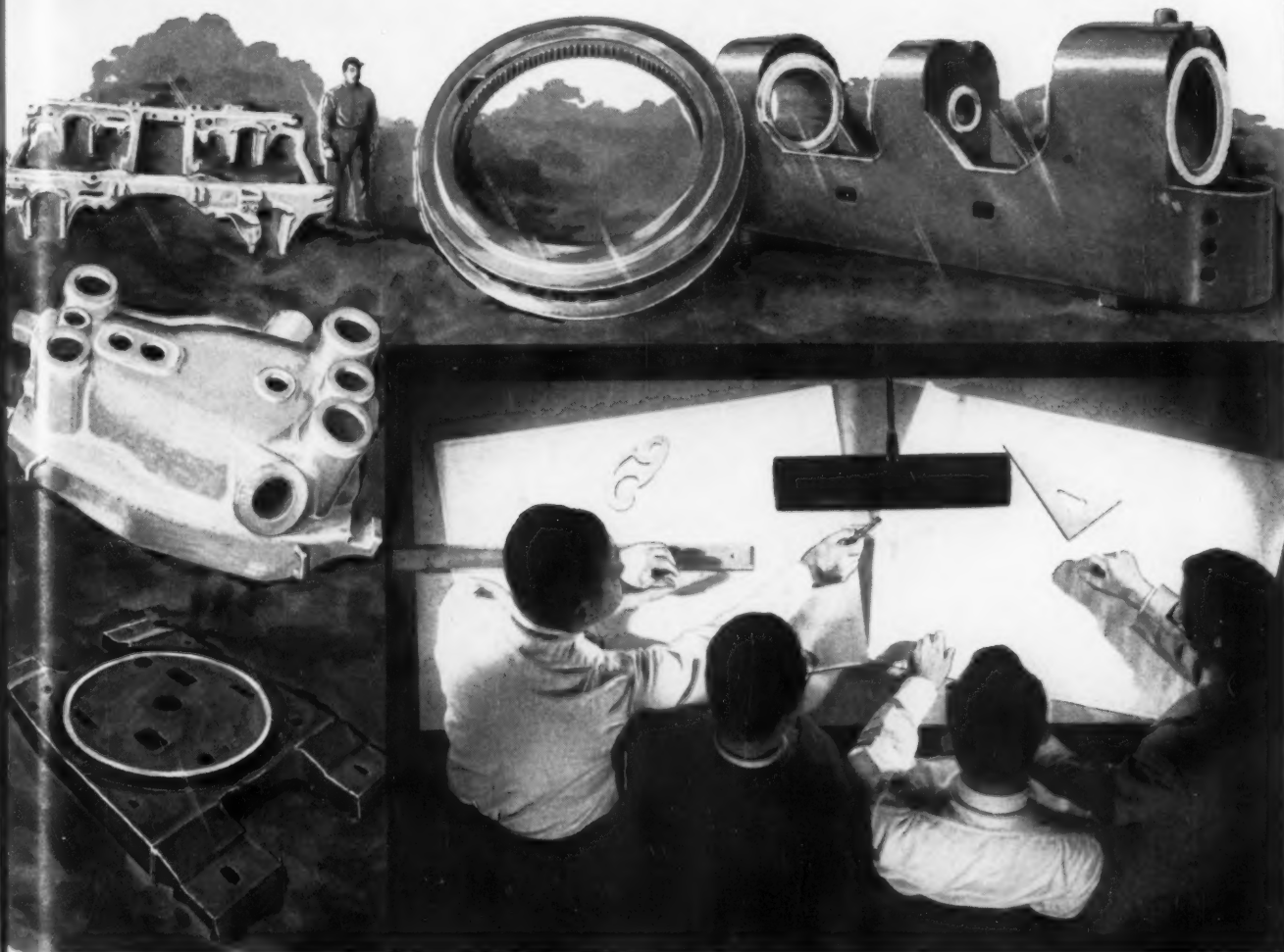
"... For Outstanding Service"—Award of the Dept. of the Army's Certificate of Appreciation and Citation for outstanding, patriotic civilian service was made recently to Pittsburgh-Des Moines Steel Co. by the U. S. Army Corps of Engineers, Pittsburgh District.

Reamer Standard—A newly revised American Standard for Reamers has been approved by the American Standards Assn. and published by the American Society of Mechanical Engineers. Designated ASA B5.14-1959, copies are available from the ASME, 29 W. 39th St., New York, or from the ASA, 70 E. 45th St., New York.

J & L Warehouse—Jones & Laughlin Steel Warehouse Div. is building a new steel service center in Cleveland which represents an investment of about \$1 million. The site is at 15600 Rockside Rd. in Maple Heights. The center will replace J&L Steel Warehouse Div.'s present center, known as Hamilton Steel Warehouse, at 12875 Taft Ave.



...where industrial progress is cast in steel



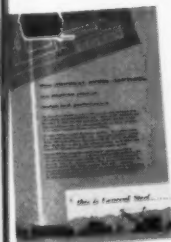
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A thorough analysis of application and design problems is necessary for the development of optimum structural designs. Experienced personnel . . . sales, engineering and manufacturing . . . drawing from General Steel's more than 50 years of experience, are fully prepared to evaluate the structural requirements of your product. Their recommendations will enable you to build a better product, taking full advantage of the many benefits to be gained through the use of steel castings.

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You used to need a different grease for nearly every job. That meant 20 or 30 lubricants in the plant, with the almost inevitable danger of misapplication — and damaged machinery.

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uses a minimum number of proper oils and greases—including newly developed multi-purpose lubricants—to reduce your inventory by as much as 80% and virtually eliminate this problem.

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Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. 1A-101.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL



Western Precipitation Corp.—A. W. Knight, elected president.

Angelus Steel Treating Corp.—W. R. Varney, elected president, general manager, and a director.

Dresser Industries, Inc., Security Engineering Div.—J. C. Helies, appointed president.

The Electric Storage Battery Co.—E. B. Ott, elected chairman of the board; **E. J. Dwyer**, elected president, and **W. P. Cairo**, elected secretary.

Screw & Bolt Corp. of America, Southington Hardware Div.—C. C. Chamberlin, appointed vice president, sales, Southington, Conn.

U. S. Steel Corp.—M. M. Chapman, appointed administrative vice president-commercial; **H. J. Mullin**, named vice president, sales.



Continental-Diamond Fibre Corp., a subsidiary of The Budd Co.—A. J. Briggs, elected vice president.

Enthone, Inc., subsidiary of American Smelting & Refining Co.—C. C. Helmle, appointed vice president and general manager.

Allied Chemical Corp., General Chemical Div.—V. W. Suellau and F. J. French, appointed executive vice presidents.

M. S. Kaplan Co.—S. J. Heiss, elected vice president.

Sperry Rand Corp., Remington Rand Div.—J. W. Schnackel, appointed vice president.

Olin Mathieson Chemical Corp.—H. W. Stull, appointed director, industrial relations; **H. H. Hunter**, appointed director, communications.

Jones & Laughlin Steel Corp.—W. C. Hall, appointed superintendent-by-product coke, coal handling and docks, Aliquippa Works; **E. M. Gillespie**, named assistant superintendent.

Flexonics Corp., Expansion Joint Div.—R. M. Quick, named division marketing manager.

Armco Steel Corp., Armco Div.—J. E. Lyons, named asst. manager, Sales Service Dept.



Blaw-Knox Co.—G. E. Kopetz, named vice president and general manager, Fabricating, Engineering, and Construction Group.



Selas Corp. of America, Automatic Machinery Div.—E. A. Siemssen, appointed chief engineer.

Foote Mineral Co.—H. C. Meyer, Jr., named general manager, market research and control.

Republic Steel Corp.—B. R. Bennett, appointed asst. to the treasurer.

SKF Industries, Inc.—H. E. Fox, appointed district manager, Philadelphia district sales office.

Bendix Aviation Corp., Bendix Filter Div.—T. R. Collioud, ap-

(Continued on P. 90)



Blaw-Knox Co.—A. E. Murton, appointed vice president and general manager, Foundry & Mill Machinery Group, Pittsburgh.

UNIVERSAL-CYCLOPS STEEL

Expand

... with a New Plant and New Cold Finishing Facilities at Coshocton, Ohio

Universal-Cyclops, one of the leading producers of cold rolled stainless steel strip, announces the opening of a new plant at Coshocton, Ohio, which will supplement our facilities at Bridgeville, Pa., and greatly augment production capacity to meet the ever-increasing demands for UNILOY® Stainless Steel.

Completely new, this modern plant represents a major step in our corporate expansion program. It provides the finest facilities, production skills, engineering and metallurgical experience. It conforms to the policies maintained throughout our 75 year history, to constantly strive for highest quality standards in our products.

Customer oriented throughout, personnel and equipment are geared to meet the needs of our customers. Large stocks of finished coils are maintained at all times for prompt delivery.

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CYCLOPS**



STEEL CORPORATION
Bridgeville, Pa.

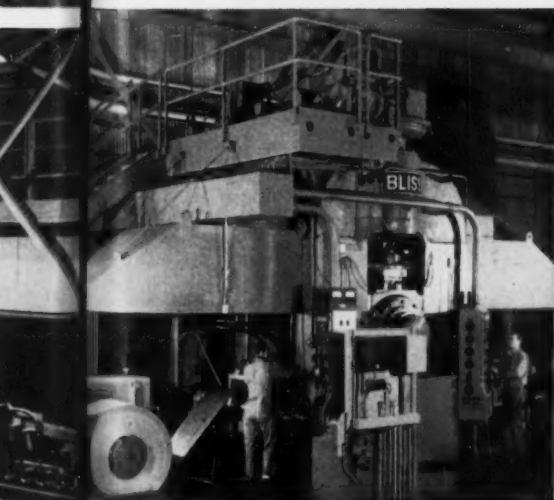
STAINLESS STEELS

TOOL STEELS • HIGH TEMPERATURE METALS



The most modern annealing and pickling line in the industry—over 600 ft. long. Handles two coils up to 24" width.

Stainless Strip Capacity



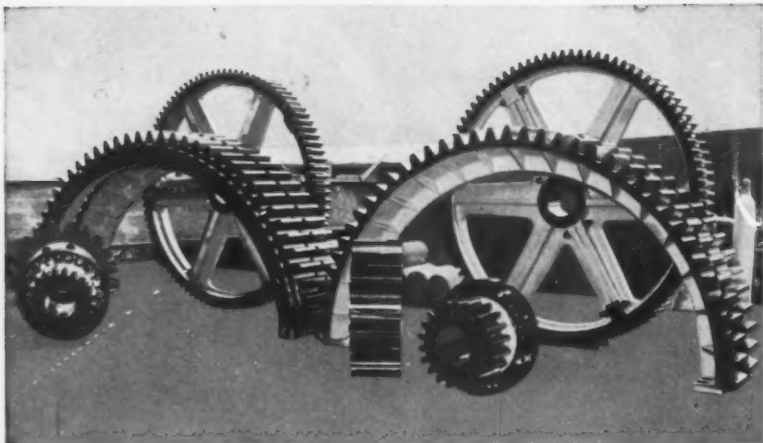
Modern four-high cold rolling mill.



Temper mill provides top quality finish.



Large stocks of stainless steel coils—assure prompt delivery.



large cast steel gears to your
designs and specifications
by **Service Foundry**



Avondale's Service Foundry Division manufactures cast steel gears (plain or alloyed) to 15' diameter and 30" face. Gear teeth are cut without limitation to tooth form or size on Service Foundry's large Gleason gear planer. Cast tooth gears are also manufactured regularly. For your next gear order, consult Service Foundry NOW! Write for our illustrated brochure, *Foundry Work—Steels, Alloys & Non-Ferrous.*



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VERSATILE BUILDER ON THE MISSISSIPPI

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(Continued from P. 87)

pointed manager, Automotive and aircraft distributor sales for Bendix Filter.



Aluminum Co. of America—T. O. English, appointed general purchasing agent, Alcoa and its subsidiaries.

Century Electric Co.—W. E. Mier, named export manager.

Industrial Brownhoist Corp.—J. D. Sharp, appointed district sales manager, and **J. J. McClanahan**, sales representative, new district sales office at Birmingham, Ala.

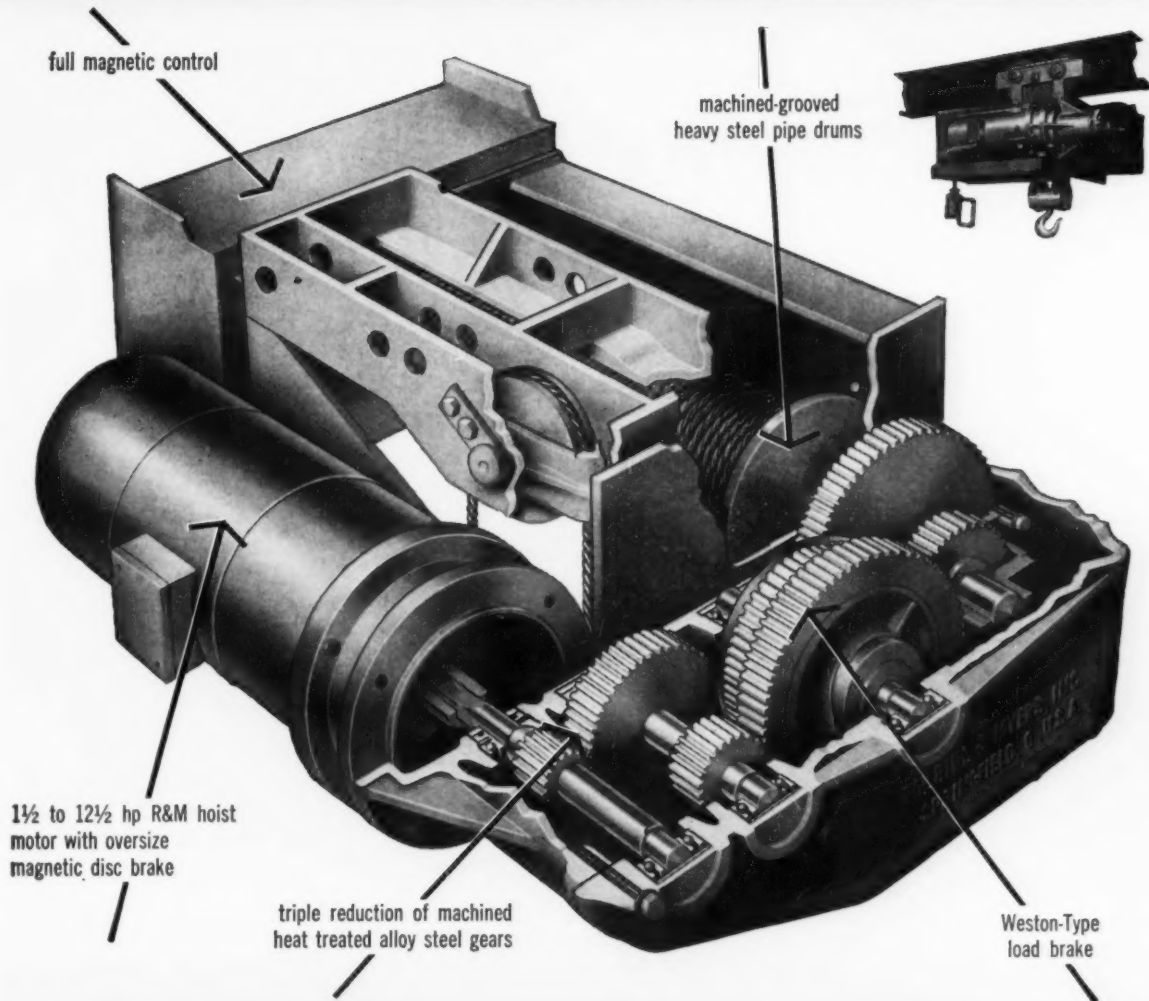


Ex-Cell-O Corp. of Canada, Ltd.—Ernest Quastler, appointed plant manager, London, Ontario.

Navan Products, Inc., subsidiary of North American Aviation—**J. R. Walchli**, appointed manager, Licensing and Research Dept.

H. K. Porter Co., Inc., Refrac-
(Continued on P. 93)

big hoist value



R&M Type F standard low-headroom hoists excel in the heaviest, most severe service. Frame is solidly braced welded steel. Special weather and dustproof R&M hoist motor runs cool, has the highest time rating found in any standard hoist—30 min., 55° C. rise. And the oversize magnetic disc type motor brake requires virtually no adjustment. Full magnetic control with reduced push-button voltage is standard. With lug mounting, Type F-2 headroom is only 16½" in 2 ton capacity.

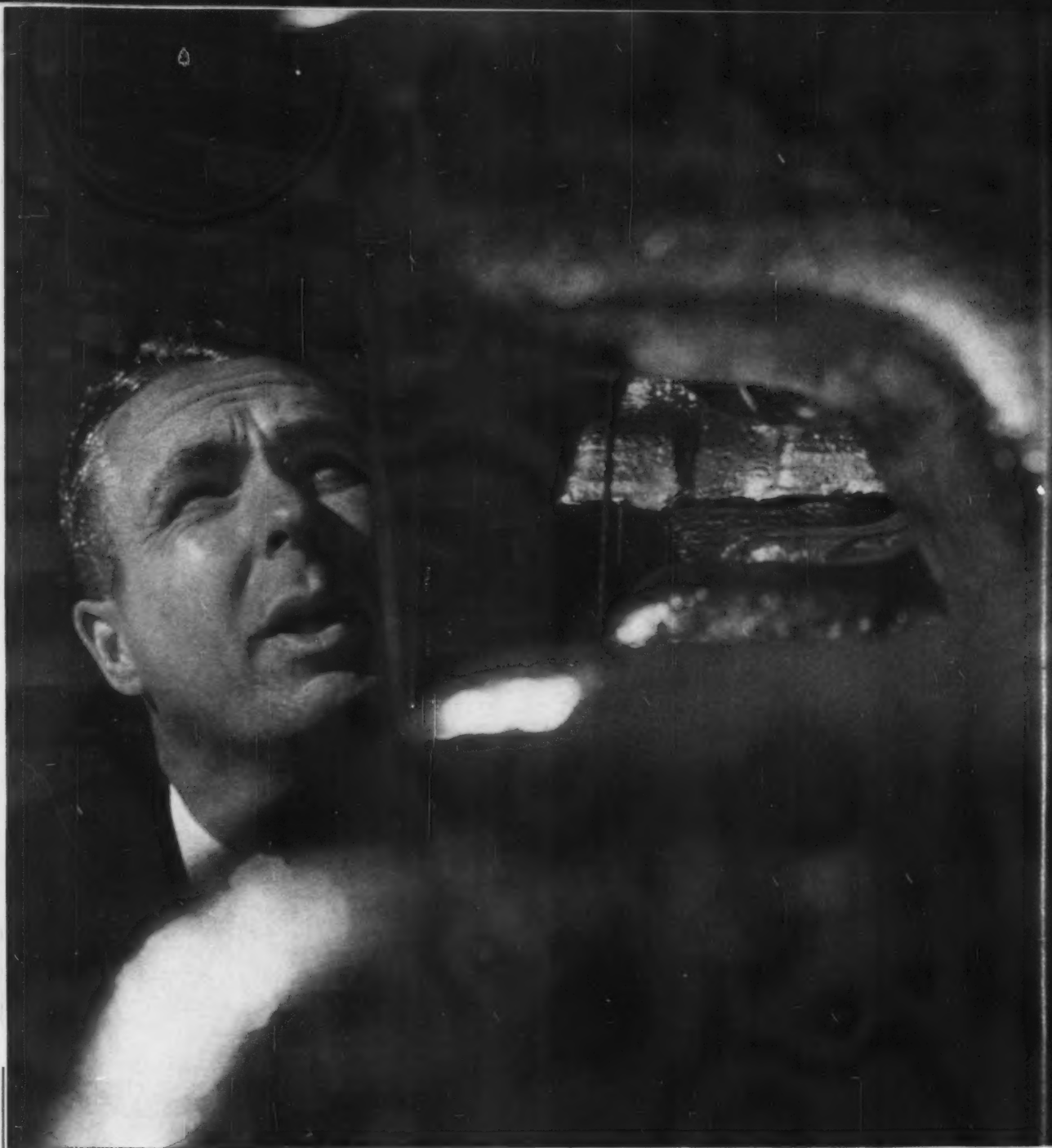
Capacities: ½ to 10 tons. Speeds: 10 to 54 fpm. Lug mounting; push, hand geared or motorized trolleys.

Robbins & Myers, Inc., Hoist & Crane Div., Springfield, O.

take it up with
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hoists / cranes



Request Bulletin 801-C today



Photograph by Bruce Davidson

DICK WILSON LIVES WITH ALUMINUM

If the next man to enter your office is an average Alcoa salesman, he'll shape up a lot like Dick Wilson. He'll draw on the experience Alcoa has gained in 80 years of aluminum production. He'll have more time to serve your interests, because he belongs to the aluminum industry's largest sales force.

He was carefully screened for his work, for out of 66 candidates, only one makes the grade. He's probably a graduate

engineer; six out of ten Alcoa salesmen are. Before his first call, he spent time in nine principal Alcoa plants to learn how aluminum is made and fabricated—part of the most intensive sales training the industry offers. All these figures give him a broad edge over his competitors.

Because he lives with aluminum on a job that takes him into scores of shops on hundreds of applications, he regu-

larly brings outside light to bear on your problems. And most important of all, he is your direct line to matchless technical resources. You can count on Dick Wilson and his counterparts in 72 Alcoa sales offices to put more than just 16 ounces of metal into every pound of Alcoa® Aluminum you buy. Aluminum Company of America, 2018-F Alcoa Building, Pittsburgh 19, Pa.



ALCOA helps you design it, make it, sell it

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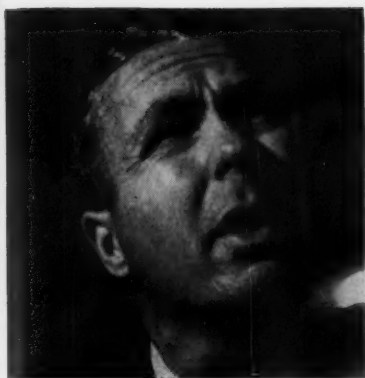
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Alcoa has hundreds of Dick Wilsons to help you design it, make it, sell it

All of Alcoa's skills are mobilized to a single purpose: To put more than just 16 ounces of metal in every pound of Alcoa Aluminum you buy. Here are 12 of the dozens of ways to do it:

1. **Research Leadership**, bringing you the very latest in aluminum alloys and applications.
2. **Product Development** by specialists in your industry and your markets.
3. **Process Development Labs** for aid in finishing, joining and fabricating.
4. **Service Inspectors** to help solve production problems at your plant.
5. **Quality Control** to meet top standards or match your special needs.
6. **Complete Line** including all commercial forms, alloys, gages, tempers.
7. **Availability** via the nation's best stocked aluminum distributors.
8. **Foremost Library** of films and books to help you do more with aluminum.
9. **Trained Salesmen** with a wealth of on-the-spot information.
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(Continued from P. 90)
tories Div.—**R. C. Conover**, appointed Western district works manager.



Borg-Warner Corp., Atkins Saw Div.—**D. W. Dewey**, named Atkins Eastern Div. manager.



Olin Mathieson Chemical Corp., Metals Div.—**F. F. Tiffany**, appointed director, market development for Olin Aluminum.

Amchem Products, Inc.—**George Russell**, promoted to chief engineer.

OBITUARIES

Mesta Machine Co.—**R. E. Noble, Sr.**, Division engineer, Pittsburgh.

The Electric Storage Battery Co., Industrial Div.—**S. M. Brown, 57**, Philadelphia plant manager.

Chicago Pneumatic Tool Co.—**J. C. Mabe, 41**, vice president, plant operations and a member of the board of directors.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE
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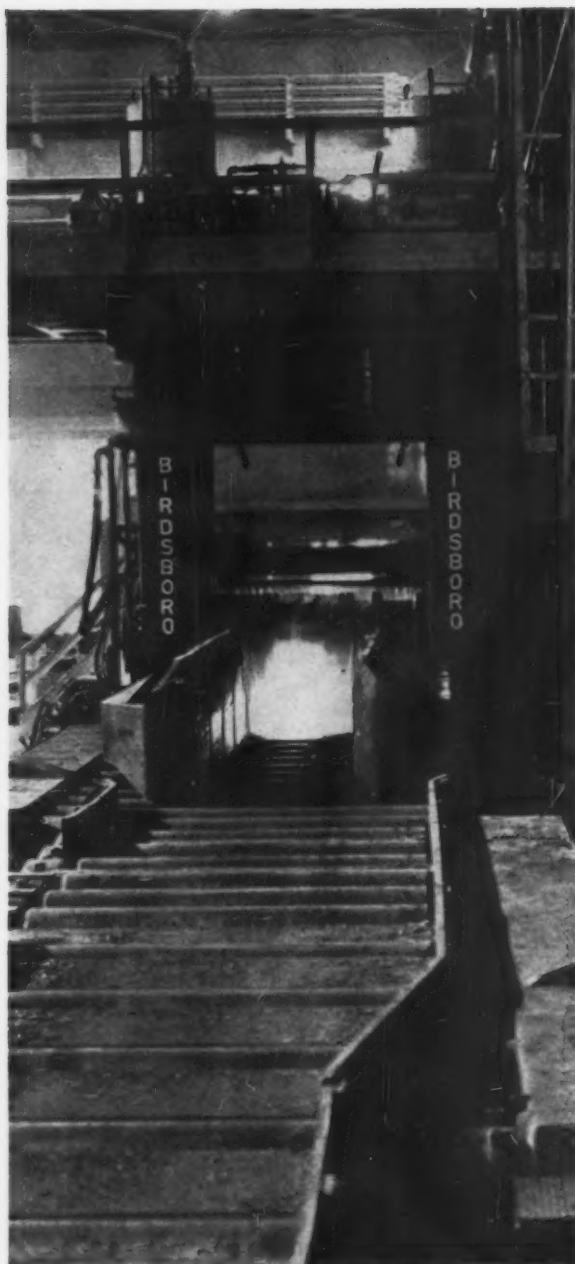
WARD STEEL CO.

**PROMPT WAREHOUSE
SERVICE ONLY**

Most Complete Stock in
America of

**BLUE TEMPERED
SPRING STEEL**

We believe that the way to sell is to
carry a stock which permits satisfying
any reasonable warehouse demand



36" 2 High Reversing Blooming Mill



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Front and Back Mill Tables and Manipulators



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STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

GENERAL

REFRACTORIES

GREFCO OFFERS 5 SUPERIOR BLAST FURNACE BRICK

To meet the increasingly specialized demands of modern iron making, GREFCO now offers five different outstanding blast furnace bricks, each tailored to meet your requirements.

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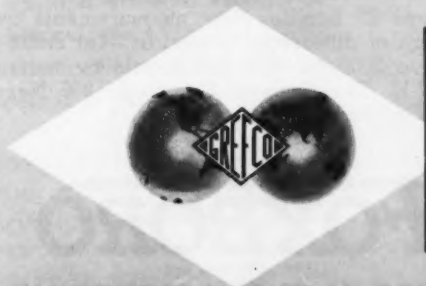
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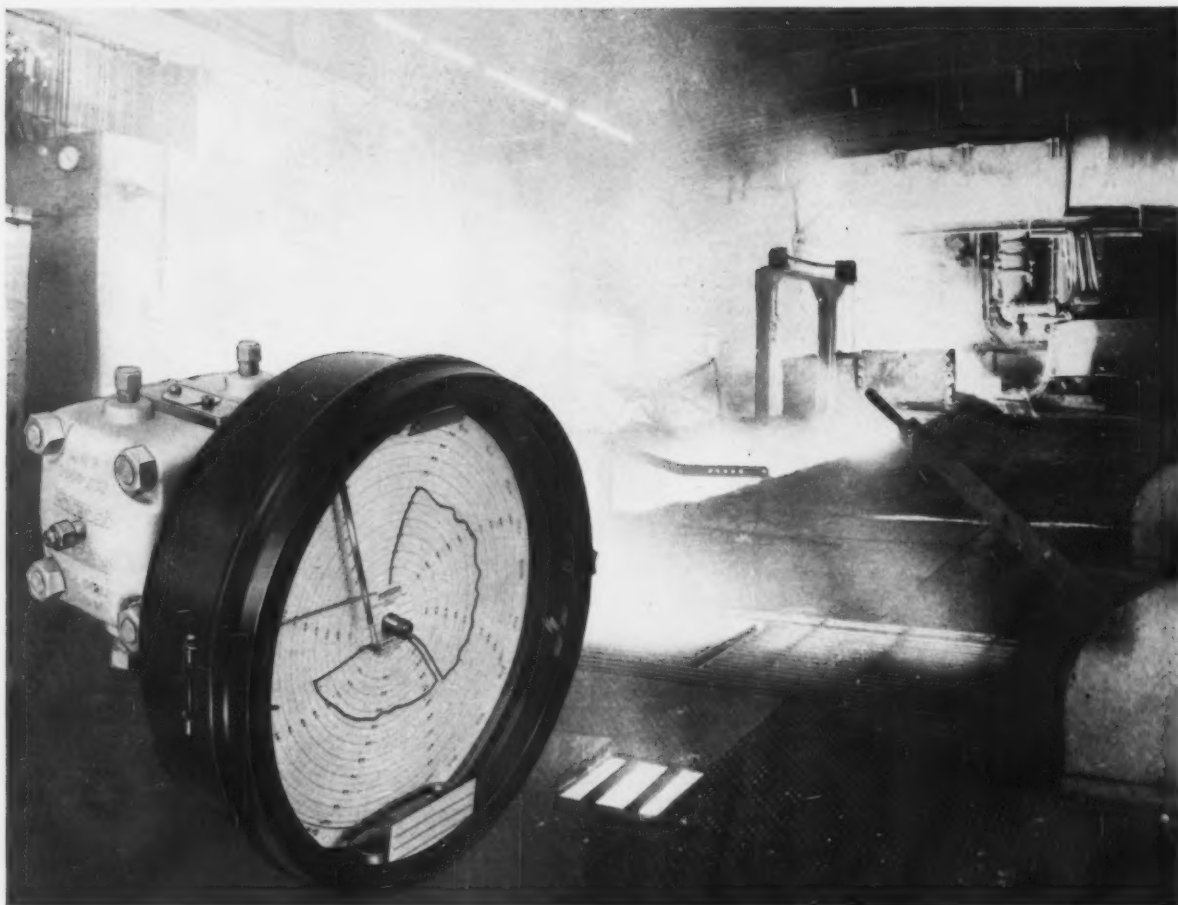
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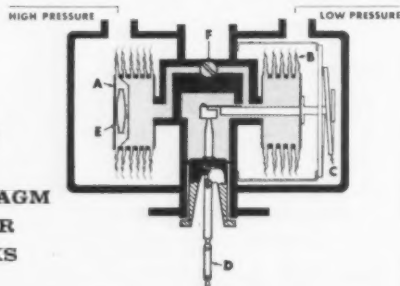
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HOW THE DIAPHRAGM METER WORKS



In the schematic drawing above, areas shown in gray represent a stable, non-freezing liquid which never comes in contact with the process fluid. Any pressure increase in the high pressure chamber compresses diaphragm unit A, displacing its liquid and expanding diaphragm unit B until the force of range spring C equals the difference between the forces of the two diaphragm units. Linear motion of diaphragm unit B moves inner end of drive bar D—outer end moves correspondingly through the bellows—sealed flexure bar, driving pen arm.

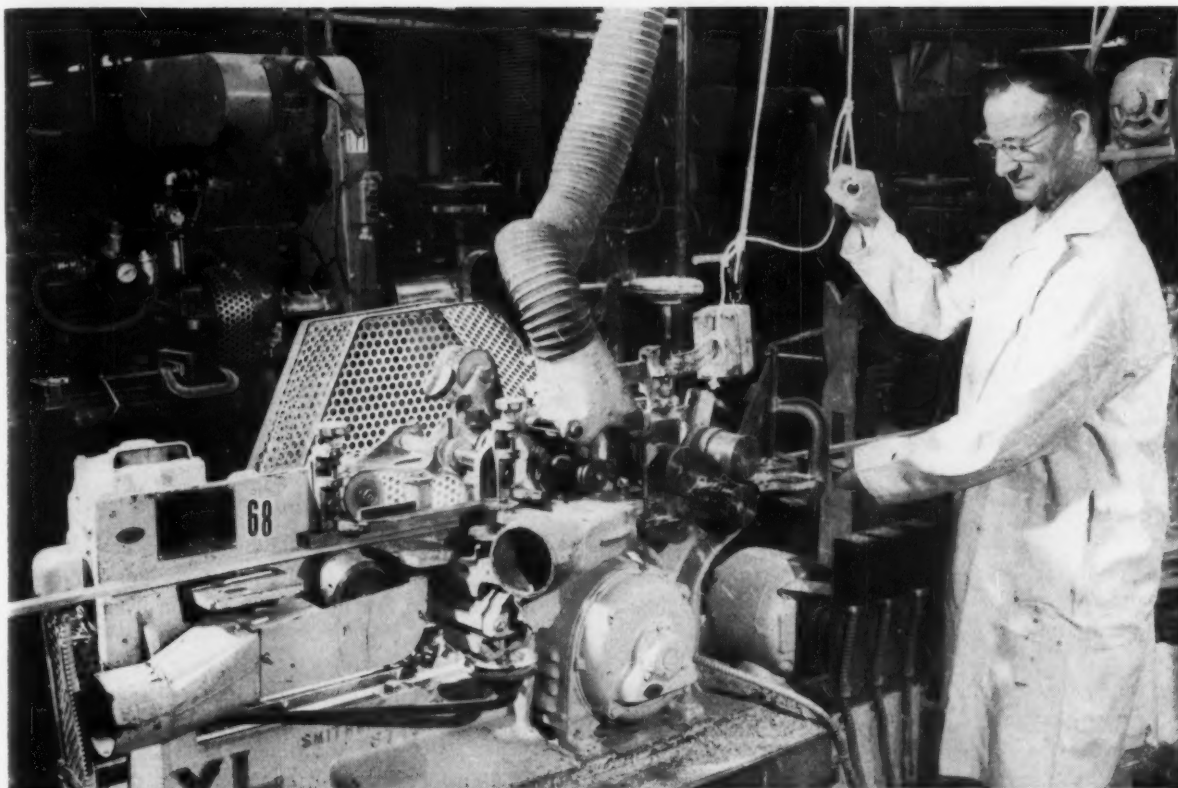
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FIRST IN FLOW METERING



MUST BE SMOOTH: Woodworking machine uses carbide tipped cutters to mill fiber tracks for sliding doors.

How to Machine and Form Vulcanized Fiber Materials

By T. R. Silk—Plant Manager, Continental Diamond Fibre Corp., Newark, Del.

Vulcanized fiber—by itself or combined with metals—is turning up in a growing number of mechanical, electrical and chemical applications. Here's how to process it in the shop.

■ Today, more and more metalworking plants find that they need to know how to machine and form vulcanized fiber.

Increasing amounts of this ver-

satile and inexpensive material are being used for such products as washers, gears, cams, bearings, slot wedges, shock-absorbing plates, switch handles, containers and box liners.

Standard metalworking or woodworking equipment will cut and machine vulcanized fiber quite easily. Moreover, such machinery can often be modified to increase output and reduce production costs. For example, higher speed spindle

drives are often put on metalworking machine tools to replace slower, more powerful original drive mechanisms.

How to Shear—Fiber sheet may be sheared like metal. A hand operated drop-knife shear will cut sheet up to 1/16 in. thick. A power operated metal squaring shear or a rotary slitter will handle thicknesses up to 1/4 in. Shearing may be done at speeds up to 60 strokes per min-



AUTOMATIC PRODUCTION: Screw machines are excellent high speed tools for machining fiber bushings.



DISKS OR HOLES: Accurate disks or holes, up to 6 in. in diam and 1 1/4 in. thick, are often flycut.

ute with hand feeding, or 600 fpm for rotary shearing.

Careful heating to 200°F will help produce better sheared edges on thick fiber pieces. However, heating does cause dimensional changes and may make it hard to hold close tolerances.

Sawing and Cutoff—Where close tolerances or smooth edges are not important, fiber can be cut with a standard woodworking bandsaw. In fact, a bandsaw should always be used for curved cuts. Teeth range from 5 to 8 points per in., and cutting speeds go up to 9000 sfpm.

Circular sawing is recommended for straight cuts on thin material. A hollow ground, carbide tipped blade without set and with 2 or 3 teeth per in. gives smooth edges and close-tolerance cuts at speeds not over 3600 rpm.

Speed Aids Drilling—The wide-flute type of drill with a steep twist, narrow web, and highly polished flutes is recommended for vulcanized fiber. If kept sharp, regular high speed twist drills do satisfactory work.

Drills should be run at the highest speed that won't burn either the

tool or the fiber. A No. 60 drill should run at a minimum of 10,000 rpm, and a 1/4 in. drill should run at 2500 rpm, minimum.

Don't force the drill. If it's sharp, it will need only slight pressure. Dubbing the drill lip and giving it plenty of clearance will help keep the fiber material from splitting. Since the fiber shrinks somewhat after drilling, holes should be drilled 0.002 to 0.004 in. oversize unless they are to be reamed.

Avoid drilling parallel to the fiber laminations. If this must be done, put a knee block or similar clamp on the work to clamp it on both sides. Lift the drill frequently to clear chips away.

A tight, well-designed drill jig that clamps the work at top and bottom will permit drilling three or more thicknesses of material simultaneously. Backup plates prevent breakout and insure clean, sharp holes.

Tapping and Threading—A 75-pct thread with a Class 2 fit is the maximum accuracy obtainable in both interior and exterior threads. Because of the resilience of fiber, a positive rake on a tap, die, or

single point tool will cause the tool to dig in, crowd its lead, and cut a weak thread. Tools should have up to 10° negative rake, depending on the size of thread, pitch, and finish required.

Tap holes should be drilled 0.002 to 0.004 in. larger than would be the case for metal, and taps should be 0.004-in. oversize on pitch diameter. Moderate applications of light machine oil help in tapping. When tapping parallel with laminations, a tight clamp will keep the material from splitting.

Fine threads are best chased on a lathe. Self-opening dies are excellent for quantity production if a few precautions are taken. To prolong chaser life, use chasers without chamfers on the front. A chaser with a front extension costs little extra and will outlast two or three stock types. Chasers must be kept sharp, however.

Tips on Turning—The work should be fed continuously and steadily. Stopping the cutting tool in the middle of a pass will mark the fiber material noticeably. Skived forming tools are used, but since they produce long, ribbonlike chips

on the softer grades, spindle speed should be as high as possible to throw the chips away from the work.

A sharp tool and plenty of clearance (at least 30°) will contribute more than any other factor to the successful turning of vulcanized fiber. Although the material is extremely hard and tough, it is also slightly elastic. Thus it is inclined to crowd against the back of the tool where it generates heat and dulls edges. Always allow plenty of clearance and keep tools sharp.

Diamond tools may be used for light turning cuts and close work. But high-speed steel or carbide tipped tools are best for volume production. Grind turning tools to about the same degree of sharpness used for turning brass, allowing plenty of clearance but no rake. Take as coarse a cut as possible, using speeds and feeds similar to those used for brass.

Screw Machine Practice — Vulcanized fiber products are often machined on automatic or hand-operated screw machines. Generally the equipment may be run at top speeds.

An automatic with a $\frac{1}{2}$ -in. diam spindle capacity and a $\frac{3}{4}$ in. top-length capacity for turning and boring should be run at 6000 to 7200 rpm for all operations except threading. Machines with $\frac{3}{4}$ -in. diam spindle capacity and $1\frac{1}{4}$ -in. length capacity for turning and boring are often run at a maximum spindle speed of 4230 rpm. Where the spindle will take $1\frac{1}{2}$ -in. diam work up to 2 in. long for turning and boring, top speed is 2150 rpm.

Shaving Fiber Materials—Blanks may be shaved if they are irregularly shaped and too thick to punch. Shaving is fast and accurate, and generally produces smoother edges than punching does.

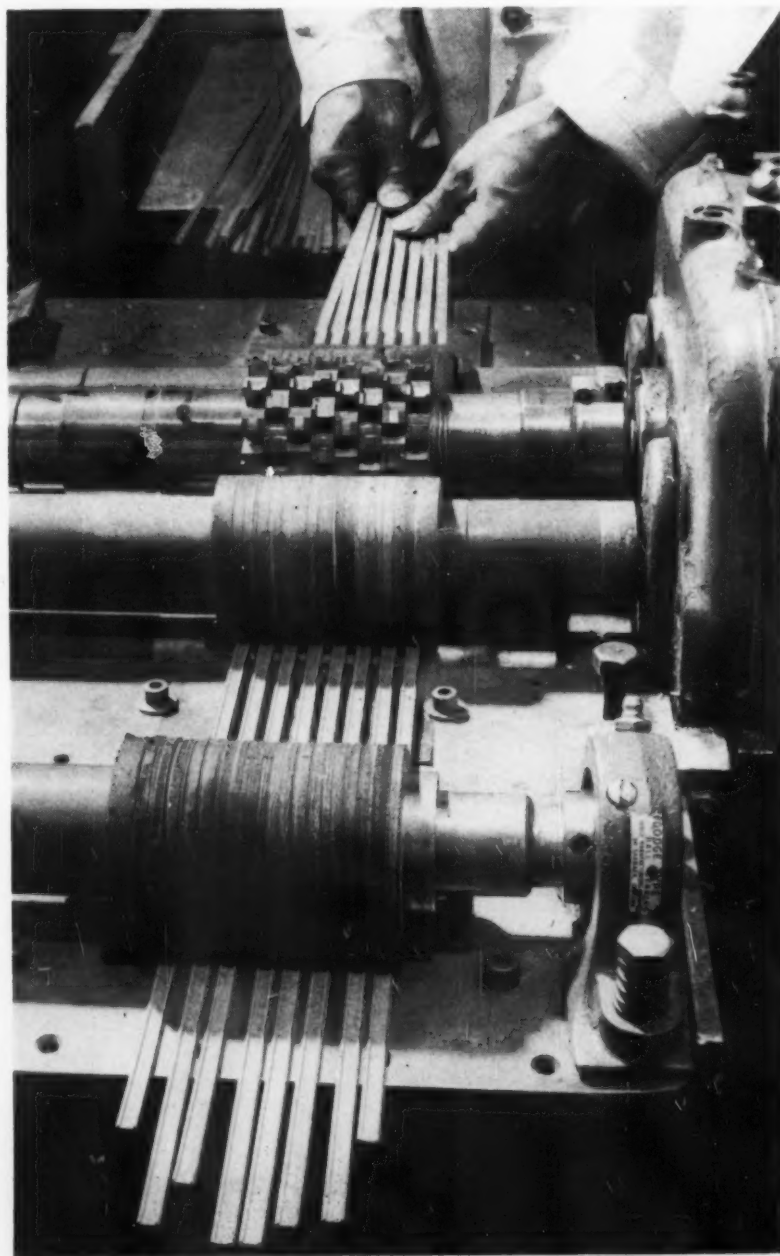
Double-decker dies are often used for fabricating fiber materials up to $\frac{3}{8}$ in. thick. These are combination punching, blanking, and shaving tools; the blanked piece is pushed through the shaving cutter

on the same stroke that does the blanking.

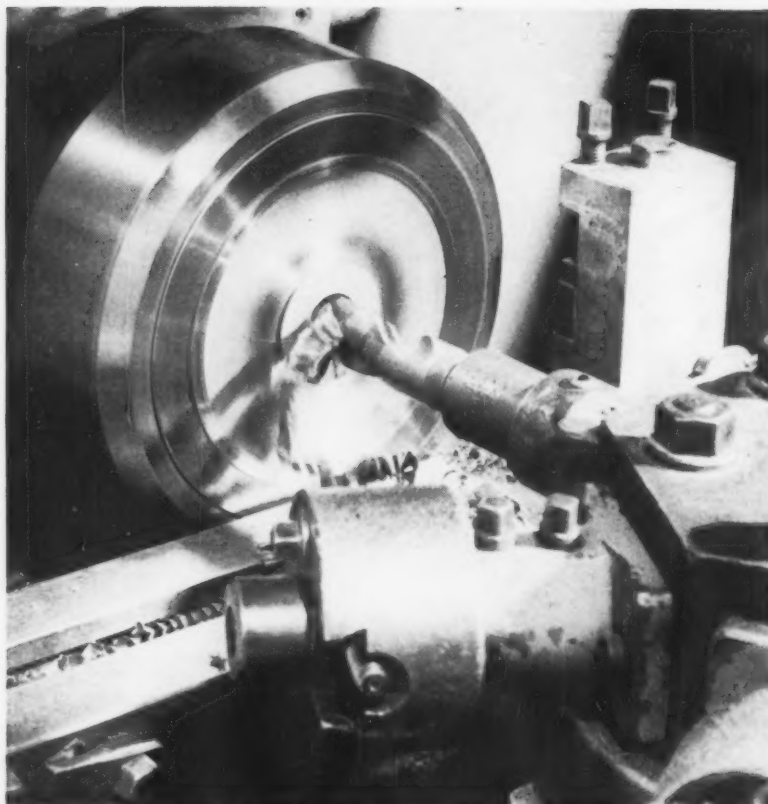
Broaching Hole Shapes—Broaching is often used to produce square, polygonal, or other regular or irregularly shaped holes in vulcanized fiber. The method may also be applied to keyways and the like. In broaching across laminations, the fiber must be backed up with a mild steel or brass plate. This forms a

slide fit with the last cutting tooth of the broach to prevent fraying and breakout.

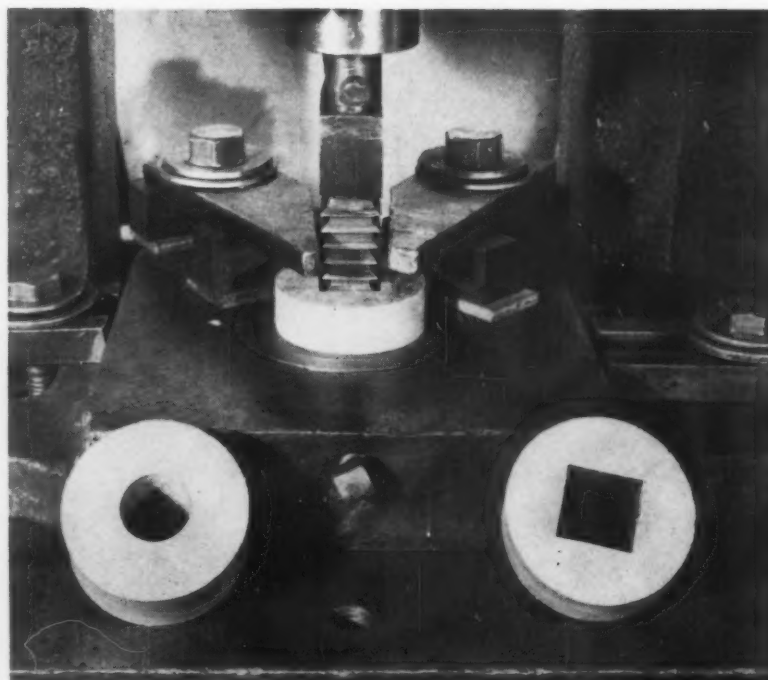
When broaching cuts are made parallel to laminations, a fixture should be used to apply pressure at right angles to the laminations. Provide ample chip room between the broach teeth, and with pitch ranging from $\frac{1}{4}$ to $\frac{3}{4}$ in., take a cut of from 0.020 to 0.030 in. per tooth,



WEDGES IN BUNCHES: Carbide tipped cutters mill-plane eight fiber slot wedges simultaneously. Multiple processing yields 3850 ft per hour.



SHARP TOOLS HELP: Turret lathes are the answer in machining many vulcanized fiber parts. Spindle speed on this drilling job is 1420 rpm.



CLEAN HOLES: Broaches cut a variety of hole shapes, keyways and the like in fiber products. Cutters require ample chip room between teeth.

depending on the grade and thickness of the material.

Sanding and Grinding—Sanding is used to face and shape fiber surfaces, to roughen surfaces for glueing, and to remove burrs and sharp edges. Grinding finishes workpieces to close tolerances. Machines are the same as those used for metal or wood. Abrasive belts and disks of between 30 and 120 grit are used at speeds up to 2000 fpm for finishing.

Double spindle machines are used to grind two opposite parallel surfaces at the same time. The abrasive wheels range from coarse to fine, and grinding is done at speeds up to 5000 fpm.

Centerless grinding with a coolant is a standard operation for fiber tubes and rods. Polishing of these products is done with dry belts and rouges.

Fiber Forms Well—The ability of vulcanized fiber to be formed into permanent shapes is one of its most useful properties. The fibers actually flow when moisture, heat and pressure are applied, then take a permanent "set" as heat and pressure remove the moisture.

Regular punch presses will perform many simple forming operations on fiber materials. More complicated shapes may be formed or drawn in hydraulic presses. When the material is moist, it can be bent readily in an angle brake. Repeated moistening and drying do not alter the structure or quality of the material.

To Remove Burrs—Fabricated fiber parts are usually tumbled or shot blasted to remove undesirable burrs, dirt or fuzz. Small pieces of sandpaper are occasionally put into the tumbling barrel to help remove excessive cutoff burrs.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Forger Sizes Jet Engine Parts With Fast, Simple Cycle

Complex handling and fixturing is sometimes needed to speed a process. But here's a unit that takes advantage of its very simplicity to speed parts through a forging cycle.

■ Two design features of a new forger and upsetter make for increased production efficiency. One is the horizontal die arrangement and the other is accessibility of the working area from three sides to simplify stock handling.

That's the experience of the Thompson Products plant, Danville, Pa., division of Thompson Ramo Wooldridge Inc., in forming the outer shroud of jet aluminum compressor inlet vanes. Flat dies are used as gripper dies to hold the finished airfoil, while the horizontal ram does the sizing and forming of the shroud.

Both upsetter and dies are manufactured by EUMUCO of Germany. The added control offered by the dies closely sizes shroud thickness and holds any extruding of the airfoil in the gripper dies to a minimum.

Fast Cycle Time—Other major benefits are sharply decreased time cycle and improved dimensional control. It's only necessary to lay the piece on the bottom gripper die and cycle time is 0.211 minutes per piece.

Further, only two men, an operator and a heater, can operate the unit. Along with the reduced cycle time, a saving of 0.474 man-minutes per piece is realized.

Formerly, the operation was performed with a hydraulic clamping fixture mounted in a vertical forging

press. Here cycle time was 0.448 minute per piece.

Cuts Heat Loss—Several factors are responsible for improved dimensional control. First is reduction of the time between the piece leaving the furnace and the completion of upset with resulting reduction in heat loss.

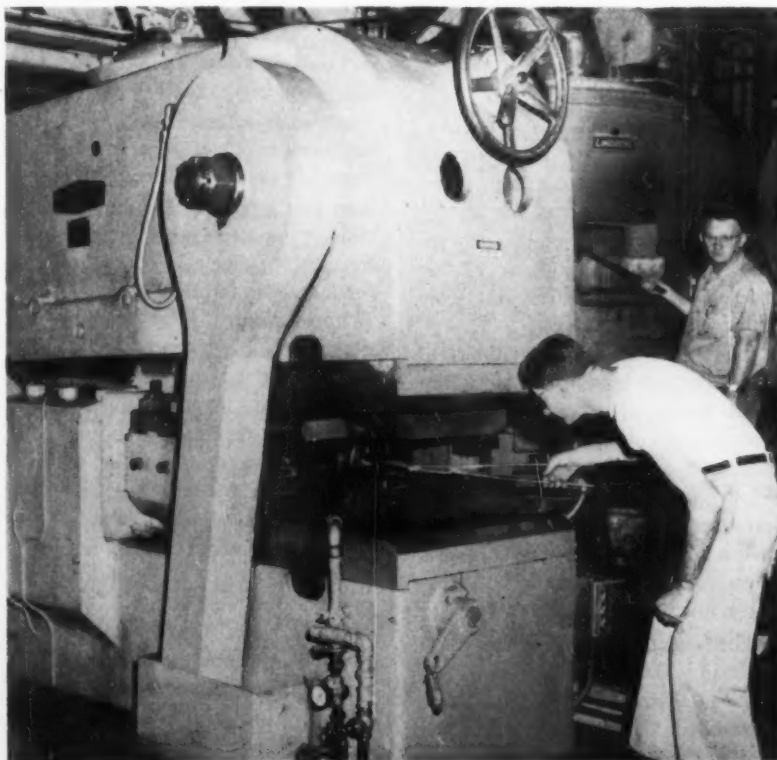
Secondly, the increased gripping pressure reduces the amount of movement of the piece. Machine accuracy is closely held because stresses on the bed are entirely axial, not 90° opposed. Full power of the upset punch is available to each position.

Equal gripping pressure and upsetting ram pressure insure extra

capacity and prevent over-riding of the ram. The horizontal fixturing allows for more consistent location of the piece than was possible with the vertical setup previously used.

Check Potential—Engineers at Thompson feel there will be many further ways to take advantage of the forging unit. One of its greatest potential applications lies in the use of progressive dies to upset parts made of the new super alloys.

With conventional forging methods, numerous operations are needed to move any appreciable amount of stock. The new unit should reduce these operations to a minimum, resulting in lower manufacturing costs.



CONTROLLED EFFICIENCY: Upsetter processes parts with fast cycle time, strong gripping pressure and horizontal fixturing.

Cobalt Debate Points Up Need For Standards in Nuclear Use

Constructive criticism can benefit both sides of a healthy controversy. So reader A. M. Bounds, Chief Metallurgist, Superior Tube Co., Norristown, Pa., set down his comments on the recent technical article, "Need Low-Cobalt Stainless for Nuclear Applications," by W. L. Fleischmann, The IRON AGE, February 12, 1959.

In publishing Mr. Bounds' comments, the editors feel it only natural to let the author, W. L. Fleischmann, Consulting Engineer, Knolls Atomic Power Lab-

oratory, (U. S. A. E. C.), General Electric Co., Schenectady, give his interpretation of the problems and questions raised by Mr. Bounds.

The give and take on this subject comes at an appropriate time—the American Society for Testing Materials is conducting a forum on nuclear problems at its annual meeting at Atlantic City, N. J., June 21-26. Also meeting at the same time is ASTM Committee A-10's Subcommittee 13 on Specifications for Nuclear Reactor Structural Materials.

Reader A. M. Bounds offers a wide point of view on cobalt limits for stainless.

■ Dr. Fleischmann has very ably drawn attention to the growing problem of cobalt content in stainless steels as it affects the design and fabrication of nuclear equipment. The last paragraph of his article deserves repeating and some further elaboration:

"What are the practical limits of cobalt content in stainless steels? In steels produced from regular raw materials, a cobalt limit of not more than 0.05 pct can be maintained by using pig iron or steel, low cobalt ferrochrome and nickel products, and no scrap except mill remelt. Even cobalt of less than 0.01 pct is feasible."

The technical feasibility of achieving 0.05 pct maximum or even 0.01 pct cobalt is not to be questioned, since vacuum melted heats of stainless steels containing as little as 0.002 pct cobalt have actually been made (at a cost of

five to seven times that of ordinary stainless steel).

Look Beyond Technology—Being practical involves something more than technology. It calls for the availability of all common mill forms; it demands attention to cost and the realization of the limited availability and high cost of cobalt-free iron as well as of nickel and the ferroalloys needed.

Furthermore, cobalt is by no means the only element which must be kept under rigid control in stainless steels destined for nuclear service. Some years ago the nuclear industry awakened to the menace of tantalum with its high neutron capture cross-section.

The demand for a stainless grade completely free of tantalum resulted in the present AISI Type-348 stainless steel. Then someone discovered gadolinium and gold in some stainless steel, which led to the analyzing of stainless steels used in nuclear work for these elements.

Check Boron Too—Boron is another element commonly present in

some stainless steels and high temperature alloys. But limiting this element can affect the high temperature strength of the alloy.

Another problem coming to light is that of the isotope of nickel— Ni^{58} . It's not nearly as severe as that presented by Co^{60} , but it cannot be ignored. The same is true with manganese and the residuals of heavy elements commonly found in high alloy steels.

Now, each of these campaigns for the limiting of one or another element has a background—a reactor that failed to go critical, or a reactor part that was unexpectedly "hot" after use, etc. Each might have been anticipated and avoided by physicists and metallurgists working together.

Favorite Scapegoats—But up to now fabricators and melters of stainless steels have had to melt a host of variations equal to or exceeding the number of reactors being built or planned. Each reactor builder has his own favorite scapegoat element.



QUALITY COUNTS: Stainless tubing must meet tests for nuclear use.

Again, it's a matter of being practical. The usual types of stainless can meet a maximum cobalt limit of 0.20 pct at no extra cost.

They can be selected from existing heats to meet a maximum cobalt of 0.10 pct at a moderate extra cost. With selected and analyzed raw materials, newly relined furnaces can meet a maximum of 0.05 pct at a very considerable extra cost.

Cost Barrier—Finally a 0.01 pct can be achieved in vacuum furnace, but at a tremendous extra cost. But the trouble is that cobalt is not the only problem.

For one reactor builder, boron must be absent, for another the steel must be extra low carbon, yet another desires that boron be present to control the neutron flux.

It would appear that the nuclear industry should be able to agree on one or two "nuclear" grades of stainless steel. They would have to meet most of the requirements as to neutron cross-section, radioactivity after use, corrosion resistance and elevated temperature strength.

A Solution—If adopted by the industry, they would become economical in cost and immediately available in all the needed mill forms. Perhaps the accompanying analysis (top right) might serve as a starting point.

Perhaps many of the engineers in the nuclear field are unaware that a subcommittee within the framework of Committee A-10 on Iron, Chromium, Nickel and Related Alloys of the ASTM is already considering the problem which Dr. Fleischmann has presented. There's also a special administrative committee on nuclear problems in the same organization.

Dr. Fleischmann is to be commended for an article which has crystallized the need for cobalt limitations. It may be hoped that the problems of nuclear use of stainless steels may be attacked on a wide front, rather than by the piecemeal approach which we have so far witnessed.

Suit Stainless to Nuclear Use

Element	Analysis, pct	Element	Analysis, pct
Carbon	0.05 to 0.10	Sulphur	0.03 max.
Chromium	18.00 to 20.00	Columbium	8 x carbon
Nickel	10.00 to 13.00		min., 1.10 max.
Molybdenum	0.50 to 1.00	Tantalum	0.10 max.
Manganese	1.50 max.	Copper	0.30 max.
Silicon	1.00 max.	Cobalt	0.10 max.
Phosphorous	0.04 max.	Boron	0.005 max.

Author W. L. Fleischmann replies with specific comments on how to select limits.

■ Because they represent the point of view of metal fabricators, Mr. Bounds' comments are appreciated. It gives the author an opportunity to elaborate on some of the reasoning which led to the study of how to establish a basis for practical low-cobalt limits for stainless steel in nuclear applications.

Stress End Use—In selecting control of specific elements in materials for nuclear work, the deciding factor is the final location of the particular part within the nuclear system. When stainless steel is used in heat exchanger tubing, the tubing is not exposed to any neutron irradiation.

Only corrosion products transported to the core are irradiated. The number of isotopes formed due to neutron irradiation is then a function of dwell time within the core.

The identical stainless steel, if used for fuel element sheathing, would receive a constant high dose. Corrosion products thus formed and later carried through the system would have a larger concentration of radioactive isotopes than the transported corrosion products.

Need Two Limits—Hence, it's readily apparent that two limits for

cobalt should be discussed: one in the range of 0.05 pct maximum for stainless steel outside the core itself, and the other for parts constantly exposed to high neutron fluxes, such as fuel element sheathing within the core.

For parts within the core, the high cost of lowest obtainable cobalt might well be justified. The advantage of stainless steel with 0.05 pct maximum cobalt over one with 0.20 pct might be real in a compact power plant. But the same advantage might conceivably disappear in a plant having a different layout.

On the subject of boron, the need for control in stainless steel is again dependent on end use. If the steel is in a control member, then boron is needed for neutron absorption.

Clear Up Uncertainty—As for the "favorite scapegoats," one solution would be for the steel industry to investigate and record the presence of elements of concern in nuclear use. Quite frequently it's the metallurgist in the nuclear reactor business who is not able to get sufficient information from the suppliers. Adequate information would clear up the uncertainty.

The author agrees on the value of discussion within the ASTM. Some well planned review to which users and producers could contribute would help establish a common point of view.

Give Conveyors Automation With Mechanized Handling

By F. I. LeVeque—President, Anchor Steel & Conveyor Co., Dearborn

If you already have a conveyor system in use, it's only a short step to a completely mechanized setup.

Labor cost trends are forcing many plant managements to take a closer look at automatic handling.

■ Many conveyor handling operations are done manually, despite rapid advances in automatic methods. But there's a distinct trend toward greater efficiency by introducing mechanical handling devices.

While conveyor systems are a form of mechanical handling, an operation requires more than simple transport of parts to qualify as automatic. A true automatic operation is one with mechanical handling between conveyors, handling between conveyor and a machine, or handling between a conveyor and an unloading station.

How to Start—Experts in cost

analysis have charts and formulas for calculating whether automatic handling will pay or not. For management, however, it's enough to know that these guides exist and are readily available.

In determining where to apply automatic sequences to conveyor systems, we have six basic areas to examine. Your analysis should cover each for its effect on the total operation in terms of cost, product quality, and production efficiency.

The six areas are: 1. the workpiece, 2. the conveyor, 3. the plant, 4. labor costs, 5. scrap and maintenance, and 6. production requirements.

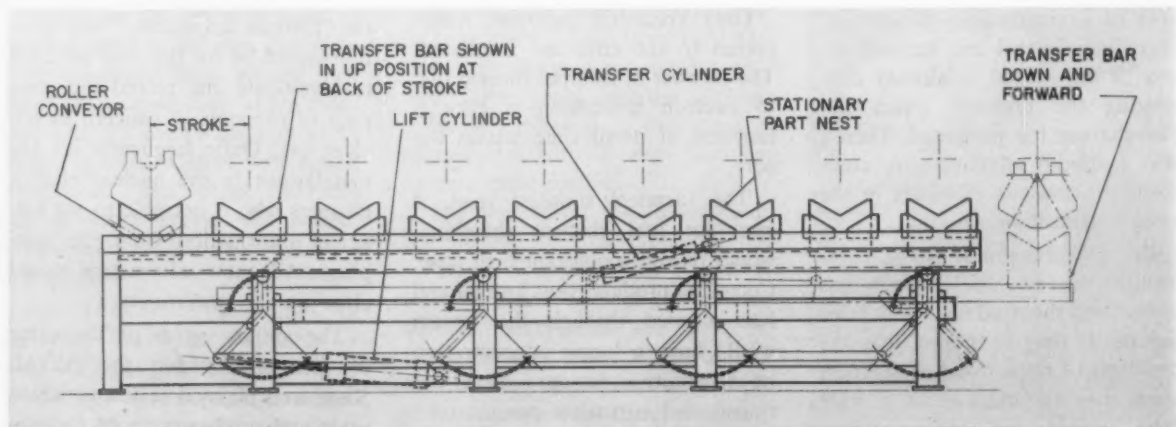
Questions to Ask—The first three can be identified as physical considerations. The last three are economic. While physical features of part, conveyor and plant loom large, the final decision will always be one of dollars and cents.

In studying part characteristics for automatic handling, we must ask three questions. First, does the

part, in shape, size and weight, lend itself to automatic handling at this work station? Secondly, will the part be consistent in its reaction to automatic handling motions? And finally, how extensive are year-to-year design changes likely to be?

Shape, size or weight of a part poses no impossible barrier to automatic handling. But equipment needed for a part of complex shape, extreme size or excessive weight could mean prohibitive costs. On the other hand, the conveyor-to-conveyor transfer device is an inexpensive but reliable mechanism for handling heavy castings automatically.

Physicals Count Too—Mechanical properties, such as resiliency and ductility, often have a significant effect on a part's adaptability to automatic handling. For example, a part may perform perfectly after standing overnight in the plant. But it may cause trouble when introduced to the same sequence after



CONVEYOR-TO-CONVEYOR: Walking-beam transfer lifts and carries heavy castings from nest to nest

to bridge gap between two roller conveyors. Developed by Anchor, it's a low-cost setup for workpieces.

it comes in from the dock on a winter's day.

Mechanisms for automatic handling can be designed to allow for minor year-to-year changes in part design. Extensive changes may require modification of mechanism. Sometimes the extent of annual change may mean redesign of the automatic device. Even so, savings will often outweigh equipment costs.

The body skid return pictured is an interesting example of an arrangement that minimizes the effect of year-to-year workpiece changes. Designed around a basic carrier or fixture, the handling equipment life is extended despite substantial changes in workpiece shape. The fixture is merely altered each year to the part changes without touching the locating points.

Added Conveyor Costs — Costs for new conveyor installations with and without automatic handling can be quite accurately estimated by the supplier. Where an existing conveyor is to be upgraded with automatic handling sequences, the picture is more involved.

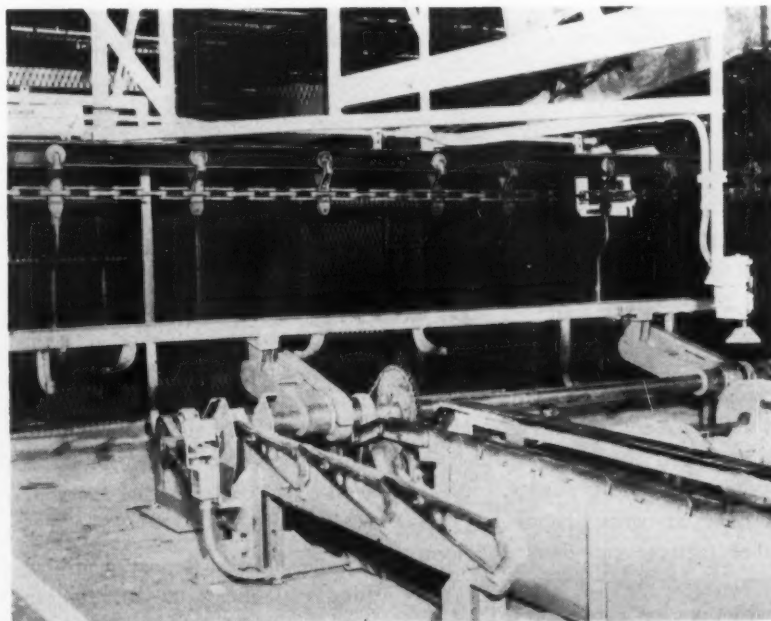
First, establish anticipated increase in production capacity as a basis. Then determine what added costs to guard against for conveyor modification. Don't overlook power requirements, drive arrangements and conveyor synchronization—the prime check points.

Sometimes system designers can use characteristics of a conveyor for automatic handling. An upright return pallet conveyor, delivering foundry cores to a roller conveyor, is such a case. As the pallet nears the end of the line, it drops down and returns to the start of the line, maintaining an upright position. By designing a core-holding fixture with a flange on each side the normal movement of the pallet has been used to strip the fixture from the pallet.

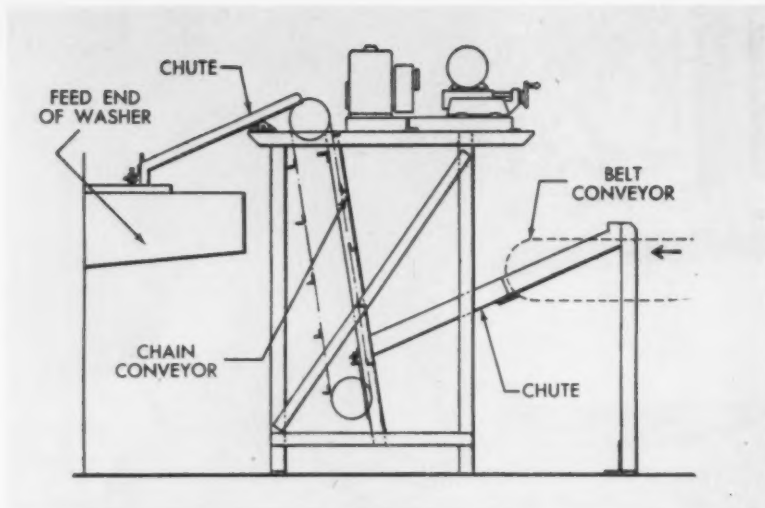
Double Function—Again, a simple chain elevator mechanism is made to perform a two-fold function. First, the elevator raises the workpieces (rocker-arm shafts) from the level of a belt conveyor dis-



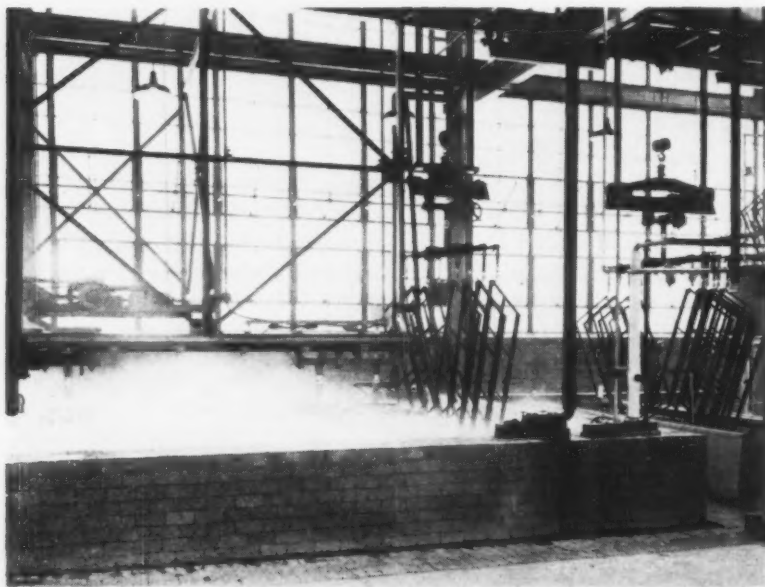
AUTOMATIC TRANSFER: Upright return conveyor delivers foundry cores to roller conveyor at Chevrolet Grey Iron Foundry, Saginaw. Operator loads core on overhead monorail with special lift truck.



LONG LIFE: High side-bar chain conveyor delivers auto body skids to overhead trolley pick-up, which, in turn, reciprocates 180°, lifting skid; cradle holding skid is always upright.



IMPROVED DESIGN: Schematic of elevator transfer mechanism for handling of rocker-arm shafts between belt and feed end of washer conveyors.



SPACE SAVER: Drop rails of overhead trolley conveyor give automatic rinse and pickling cycle, eliminate needed floor area.

charge to the feed end of a washer conveyor. Second, the elevator mechanism picks the shafts off one at a time, automatically sequencing and properly spacing them for conveying through the washer.

These are minor compared with other factors, but don't overlook them. Space limitations can impose restrictions on automation. Cost of handling mechanism may be boosted, including installation and maintenance.

Often automatic handling conserves space by eliminating the operator's area. A window frame processing line with manual transfer of the carriers from one station to another cut out the usual space between tanks.

Labor Costs—Reduction in handling costs, direct and indirect, represents the greatest single factor in favor of automatic handling. In estimating indirect labor costs include such factors as setup times and

inspection. Fringe benefits to hourly-rated employees also count.

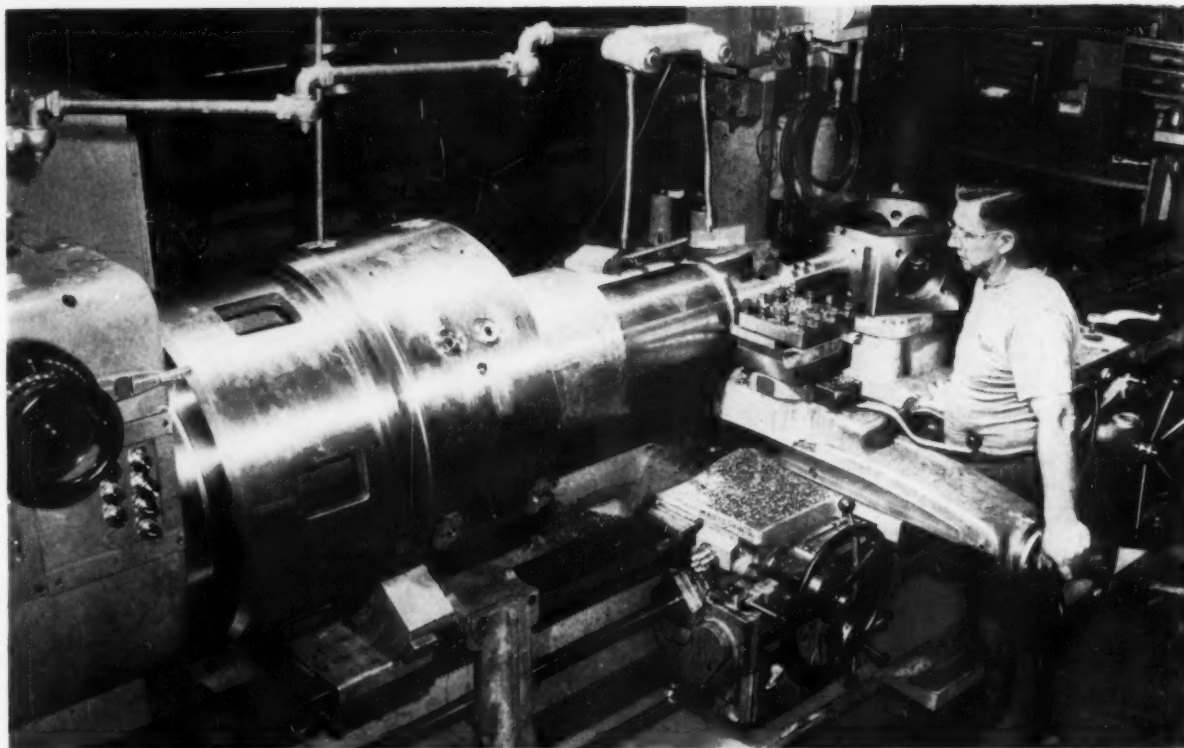
Considerable scrap reduction often results in the swingover to automatic handling. They also provide less inspection and lower costs. The potential can be estimated by studying the characteristics of the part, type of automatic mechanism planned and past experience.

Maintenance costs in automatic handling may be on the minus side. Added equipment usually means added maintenance. Downtime is another intangible factor. Estimates of these charges should be divided into either the human element or automatic equipment factors—not to both.

Volume Important—Volume is less critical in determining feasibility of automating conveyor functions than in machining operations. Generally, any part whose production volume can support a conveyorized system is a logical candidate for automatic handling.

Where automatic handling will give increased productivity, part volume looms large. It determines savings in labor costs, scrap and inspection time. To determine direct labor costs under a manual system, for example, apply wage rates on a per piece basis to total production obtainable with automatic handling. This is the only way to get a true comparison. Similarly, determine scrap and inspection costs on the basis of any increase in productivity from automatic handling.

Careful Consideration—None of the things listed is the sole criterion for an automatic handling decision. Like all capital investment deals, this is a team proposition. Overall costs of automatic handling must be justified by the return on the investment. And automatic handling must be approached with caution. To many people it has a magic about it that may provoke undue enthusiasm. Management's job is to see that this does not happen. A careful look at the six basic areas will temper enthusiasm with practical realities.



TOUGH JOB IS EASY: Duplex chucking fixture with turret-mounted center and headstock eliminates deflection.

Standard Lathe Takes Heavy Jobs

Simple fixturing is the key to this unit's efficiency in handling problem parts.

The setup has the power, rigidity and versatility to cut time from the toughest jobs.

■ A rugged saddle-type turret lathe is handling problem parts as well as standard work at top efficiency. One problem job is the machining of journals at both ends of 2-ton alloy iron rolls.

The heavy-duty lathe at United Engineering and Foundry Co., Canton, O., completes the job with 30 pct saving over former methods. Key to its efficiency is simplified tooling.

Use Standard Unit—With a 60-in. extended bed and a 12½-in. spindle bore, the lathe is a standard,

fixed center Gisholt Masterline 5L unit, built by Gisholt Machine Co., Madison, Wis. Electrical controls reduce operator fatigue and simplify selection of machine functions by controlling braking, spindle jogging, and motor forward and reverse.

The massive part, requiring heavy stock removal and close tolerance machining, is handled with a special duplex chucking fixture which grips the midsection of the roll body.

Extending 32 in. from the spindle, the fixture offers a chucking capacity of 17¼ in. up to the spindle and 12½ in. through the spindle core. The unit consists of two 32-in. three-jaw self-centering chucks attached to the opposite sides of an intermediate body.

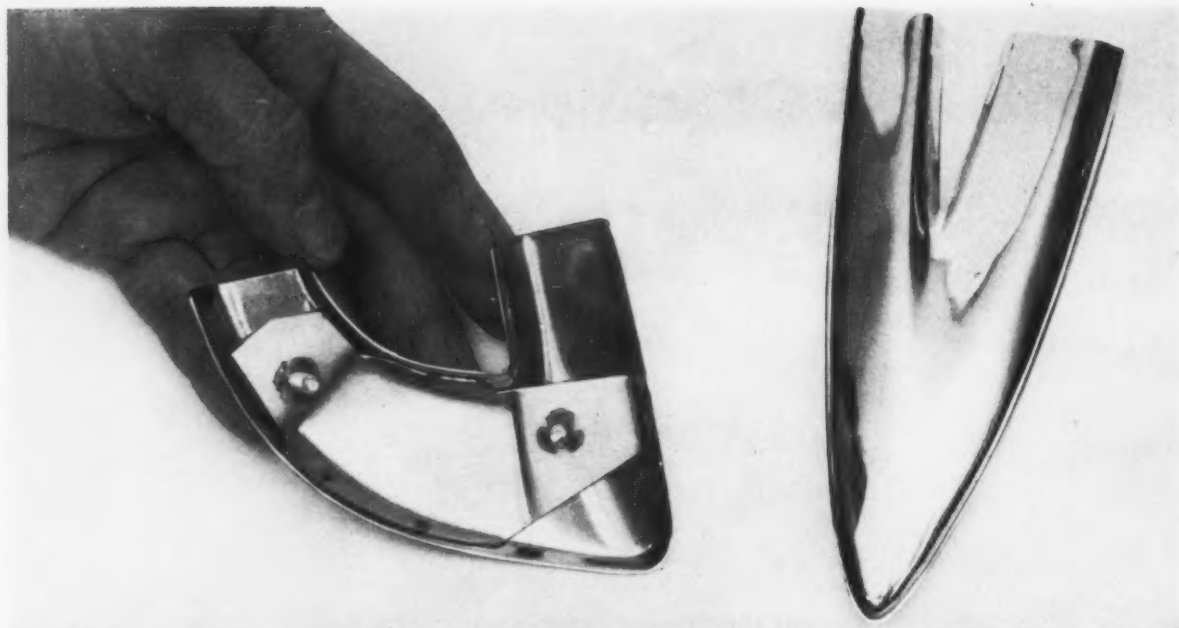
No Deflection—Despite an estimated 18,000 in.-lb bending mo-

ment exerted by the 4000-lb workpiece and the heavy fixture, the 5L headstock has the rigidity to prevent deflection of spindle and fixture. Nor have there been any bearing problems.

At the outer end, a turret-mounted revolving center provides work support. Machining is handled from the square turret on the cross slide.

Machining includes turning two diameters: 11-1/32 in. diam x 17-7/8 in. long and 10-31/32-in. diam x 1-1/8 in. long. It forms a groove 1¼ in. wide by 3/8 in. deep and an 11/16 in. radius to blend the journal with the main roll body.

After machining one cycle, the roll is turned end-for-end and re-chucked. Both ends are machined in just 3 hours and 45 minutes floor to floor with 325 lb of tough material removed.



HIDDEN FASTENING: Auto trim shown at right has fastenings on its other side like trim at left.

Method Joins Stainless Without Leaving Marks

Where appearance counts it pays to fasten items without making marks or discoloring.

A new joining method avoids both. And it cuts work time.

■ Now you can join stainless steel fasteners to stainless stampings without leaving any weld marks on the pieces. Not only this, the joining method which does it also can cut working time and die costs.

Comparatively new, the method is presently in use fastening stainless molding and appliques to automobiles. Its developer, Primeweld Corp., Dearborn, Mich., feels that it will find extensive use in many fields. These include: aircraft, appliance, furniture, electronics equipment and other industries.

Transformer Is Key—Secret of the process' success is its trans-

former. Using low voltage, high amperage for welding the stainless parts, the weld cycle is extremely short. It's so quick that pieces join rapidly—but with no distortion or discoloration of the metal.

Besides making possible a 100-pct stainless steel molding, with its inherent corrosion resistance, the process offers other assets.

Speeds Joining — Automobile makers using it report that the welding method reduces time-consuming steps. Previously, eleven separate operations were necessary to make and attach a piece of molding to one auto maker's products. Now, using the new no-distortion joining technique, this is cut to three separate operations. And it results in a stronger product, too.

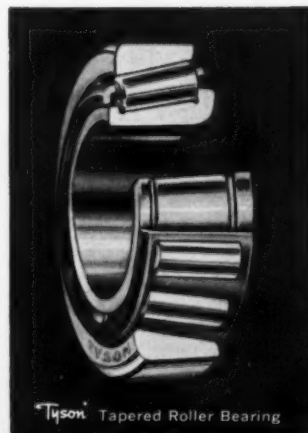
Engineers also point out that the wide flange usually on the molding

can be eliminated. This means a savings on material.

Cuts Die Costs—Major advantages are savings in time and die costs. Formerly, it took some 12 weeks to tool for a new stainless steel molding. Now it can take just four weeks. And less tooling is necessary.

There's no limit to the size of parts that can use the Primeweld method of fastening. Maximum gage possible is 0.090; minimum is 0.022. Most work already done has been with Type 430 stainless, widely used in the auto industry, says Allegheny Ludlum Steel Corp., Pittsburgh, which supplies the stainless steel parts.

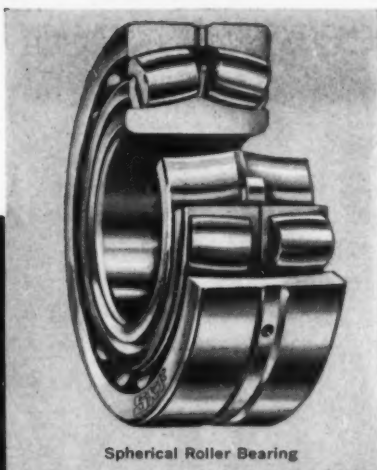
Primeweld engineers point out that auto companies are becoming more trim conscious for special seasonal displays on cars.



Tyson Tapered Roller Bearing



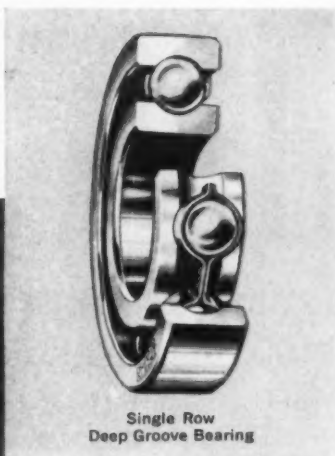
Cylindrical Roller Bearing



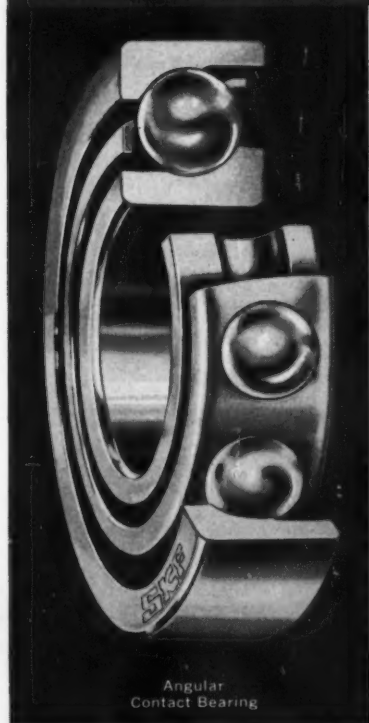
Spherical Roller Bearing



Spherical Roller Thrust Bearing



Single Row Deep Groove Bearing



Angular Contact Bearing

When can
a standard
bearing
do a
"special" job?

Suppose you need a high speed bearing to support either heavy thrust load or thrust load combined with radial load. It is almost a certainty that SKF angular contact ball bearings will do the job.

SKF bearings of this type are produced in bore sizes ranging from $\frac{3}{4}$ " to just over 7".

They lend themselves to all sorts of mountings. For example, you can mount them in pairs either face-to-face or back-to-back where axial rigidity and high radial capacity are needed. Or you can mount two or more bearings in tandem, where a particularly high thrust capacity is required.

Yet this is a standard SKF bearing, promptly available in over 80 sizes of single- and double-row types.

Almost every SKF bearing can do "special" jobs for you. Why not find out how they'd be more efficient and economical? Call any one of the twenty-five sales offices.

5924



Spherical, Cylindrical, Ball, and Tyson Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

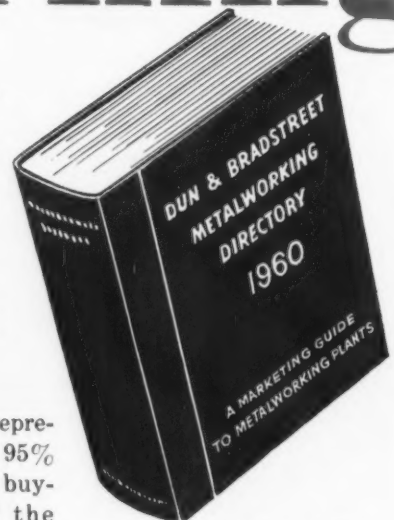
REG. U. S. PAT. OFF.

Dun & Bradstreet Announces **new** metalworking directory

a comprehensive marketing guide to 30,000 metal producing and metalworking plants with 20 or more employees.

The new Dun & Bradstreet Metalworking Directory gives exact plant locations... number of employees... tells in two ways what each plant makes by Standard Industrial Classification Number and in narrative... names key personnel at plant... all the information you need for complete sales coverage of the

plants which represent more than 95% of the potential buying power of the entire metalworking industry. Illustrations of each section of the Metalworking Directory shown below.



JOPLIN (Harris Co)

**SECTION 1
GEOGRAPHICAL**

Metalworking plants with 20 or more employees are listed geographically by states.

<p>NAME</p> <p>ADDRESS</p>	<p>JOHNSON-MATHER INC. 100 S Readin Ave Joplin 1 Kansas</p> <p>MODERN AIR COMPANY 710 Homewood Rd Joplin 2 Kansas</p>	<p>Emp 5000 SIC 3531 3532 3539</p> <p>Power shovels cranes drilling equipment for construction and mining General Management Purchasing Production Engineering</p> <p>Emp 450 SIC 3569 3623</p> <p>Gas processing equipment welding and equipment</p>	<p>PRODUCT MANUFACTURED</p> <p>TOTAL EMPLOYEES THIS LOCATION</p>
--	---	---	--

SECTION 2—PRODUCT CLASSIFICATION

Names and addresses of all plants listed in Section 1 classified by products manufactured under one or more of over 170 four-digit SIC numbers.

3821 MECHANICAL MEASURING AND CONTROLLING INSTRUMENTS

ABLE INSTRUMENT COMPANY Emp 250
322 Main St
Gasper 1 Colorado
SIC 3821
3361

ACCURATE MEASUREMENT CO. Emp 440
RD 3
Wilmington Wyo
SIC 3361
3821

SECTION 3—ALPHABETICAL

Plants listed nationally in alphabetical order

A

ABLE INSTRUMENT COMPANY Emp 250
322 Main St
Gasper 1 Colorado
SIC 3821
3361

ABLE MANUFACTURING CO. Emp 35
Broad St Ext
Jamestown Neb
SIC 3399
3811

ACCURATE MEASUREMENT CO. Emp 440
RD # 3
Wilmington Wyo
SIC 3361
3621

SECTION 4—STATISTICAL SUMMARY

This section shows number of plants by Counties and States; plants within Counties, by number in each SIC classification; and plant breakdown by employee size.

COUNTY		Total Employees	Total Plants	MICHIGAN			
				Number of Plants Employing			
Standard Ind. Classification		Plants Employing 20 or More	20-49	50-99	100 or more		
ALLEN	3321 Gray Iron Foundries					933	16	7	5	4
	3821 Motors and Generators	198	3	1	1	1	
	3722 Aircraft Engines	4876	3	1	1	1	
CLARK	3951 Costume Jewelry	73	2	1	1	—	

A new sales guide—national in scope—for the metalworking industry

INCREASE SALES— KNOW YOUR MARKET POTENTIAL WITH THIS DYNAMIC NEW SALES TOOL

The Metalworking Directory—the most useful sales tool of its kind in the metalworking industry will give you facts to

- ① Determine sales potential of each of your sales territories
- ① Measure sales performance against potential
- ① Insure prospect coverage
- ① Set realistic sales goals
- ① Adjust sales territories according to actual sales potential
- ① Guide salesmen to the right prospect—to the right man
- ① Prepare mailing lists so advertising will reach the right person in the right plant
- ① Study potential of territory and lines you are not now covering
- ① Assign sales manpower according to work load
- ① Locate additional prospects in your present selling area
- ① Allocate advertising and sales promotion dollars by area and line
- ① Distribute catalogs to the right person

Step-By-Step Marketing Procedure Outlined In Metalworking Directory

Included in the METALWORKING DIRECTORY is a step-by-step outline designed to help you find factual answers to your marketing and sales problems. This easy-to-understand outline, prepared after consultation with top marketing professionals in the metalworking field, makes it simple for you to perform your own marketing research.

Regional Editions of Metalworking Directory Available!

To meet the requirements of companies whose products are sold in smaller areas, five regional directories covering different marketing territories in the United States will be available. For a complete description of these regional editions, plus costs, check the coupon on this page.

IN NO OTHER DIRECTORY WILL YOU FIND ALL THESE PLUS FEATURES

- ★ 30,000 plants with 20 or more employees
- ★ Products manufactured in plants shown
- ★ Produced in four sections—by name; by product; geographically; and with STATISTICAL SUMMARY showing plants and EMPLOYEES by counties and states.
- ★ . . . all plants with major products made wholly or substantially of metal
- ★ Shows by over 170 4-digit Standard Industrial Code Numbers both primary products and secondary products manufactured. Up to six classifications will be indicated for each plant.
- ★ Management personnel listed by name including purchasing, production and engineering executives, where available.

Regular Price—National Edition \$350

Less Special Pre-Publication Discount of \$50

Charter Subscription—National Edition \$300

Dun & Bradstreet, Inc.
Directory Division, Dept. A
99 Church Street, New York 8, N. Y.

- ☐ We want to take advantage of your pre-publication charter subscription to the national edition of the METALWORKING DIRECTORY. Please send us an order form.
- ☐ Have your representative call to give us additional information on the national Directory.
- ☐ Have your representative call to explain the regional Directories.

Name of Concern.....

Individual Signing.....

Address.....

City.....Zone.....State.....

New Patents In Metalworking

Enameling Mild Steel

Method of enameling mild steel, M. G. Liest (assigned to Allis-Chalmers Mfg. Co., Milwaukee, Wis.), May 12, 1959. Method of enameling mild steel which enables heating the steel to high temperatures without inducing injurious effects from oxidation. No. 2,886,463.

Hydrogen Permeability

Method of determining the per-

meability of steel to hydrogen, T. J. Butler (assigned to U. S. Steel Corp., a corporation of N. J.), May 12, 1959. Method for determining the hydrogen permeability of a steel by measuring its relative electrode potential change. No. 2,886,497.

Both-Ends-Former

Machine for simultaneously operating on opposite ends of a workpiece, E. F. W. Moeltzner (assigned to Landis Machine Co., Waynes-

boro, Pa.), May 19, 1959. Mechanism for manufacturing cylindrical workpieces from smooth wire or bars for producing studs, headless screws, or the like. No. 2,886,836.

Malleable Castings

Method of producing castings having high mechanical properties, L. Peras (assigned to Regie Nationale des Usines Renault, Billancourt, France), May 19, 1959. In a process for thermally treating white castings to produce malleable iron with annealed spheroidal graphite, the castings are heated at a temperature of 880° to 950°C for 4 to 10 hours and then cooled in still air. No. 2,887,421.

Measuring Sulphur

Apparatus for quantitative determination of sulphur, W. K. Aites (assigned to Lindberg Eng. Co., Chicago, Ill.), May 26, 1959. Apparatus for quantitatively determining sulphur present in samples of ferrous metals or other materials containing sulphur in small quantities. No. 2,888,332.

Rimming Killed Steel

Method of producing a fully killed steel with rimming characteristics, D. J. Carney (assigned to U. S. Steel Corp., a corporation of N. J.), May 12, 1959. Method of forming killed steel ingots having the characteristics of rimmed steel. Nitrogen gas is introduced into the molten metal prior to teeming to promote rimming action therein. This process eliminates the necessity of hot-topping fully deoxidized alloy steel ingots. No. 2,885,752.

Carburizing Furnaces

Carburizing furnaces with recuperative heating, F. A. Rusciano (assigned to Metallurgical Processes Co., Newark, N. J.), May 12, 1959. Furnace and atmosphere generator suitable for the carburization or decarburization free heating of steel.

QUALITY and SERVICE

more tonnage per edge

AMERICAN SHEAR KNIFE CO.
HOMESTEAD, PENNSYLVANIA

The atmosphere is produced by high temperature thermal reaction, and is supplied to the heating chamber in substantially its virginal heated form. No. 2,886,303.

Foundry Apparatus

Foundry apparatus, E. A. Walcher, Sr., L. A. Kleber, and R. A. Gezelius (assigned to General Steel Castings Corp., Granite City, Ill.), May 5, 1959. In a foundry mold for rolls, ingots, or other castings, a uniform and directional chilling action is maintained by a cooling medium. The resulting casting has an improved solidification pattern. No. 2,884,671.

Furnace-Feeder

Apparatus for feeding and heating finely divided materials, W. A. Patterson (assigned to Fort Pitt Bridge Works, Pittsburgh, Pa.), May 5, 1959. Apparatus for continuously supplying ground iron ore or the like to a roasting furnace whereby a high initial heat is imparted to the ore. No. 2,885,199.

Non-Magnetic Alloy

Ferrous alloy, W. H. Moore (assigned to Meehanite Metal Corp., New Rochelle, N. Y.), May 5, 1959. Method of making a non-magnetic ferrous alloy containing free carbides in a matrix of austenite and bainite. The alloy contains at least 50 pct Fe, C, and Si within the cast iron range, and at least 1½ pct Mn and 1 pct Al. No. 2,885,284.

Alloyed Nodular Iron

Alloyed nodular iron, G. D. Dickinson (assigned to Allis-Chalmers Mfg. Co., Milwaukee, Wis.), May 5, 1959. A machinable-as-cast alloyed nodular cast iron having a tensile strength of 24,000 to 56,000 psi at 1200°F comprises 3 to 6.5 pct Al, 0.1 to 3.0 pct Mo, 0.1 to 1.0 pct Ti, and the remainder nodular cast iron. No. 2,885,285.



THIS IS A DRILL JIG

THE FASTEST, LOWEST-COST DRILL JIG IN METAL WORKING TODAY

Using tape controls to cut tooling costs is a fact.

Ask us to prove it. We will program your parts and demonstrate.

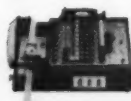
Details and photographs of a variety of parts, compared with conventional machining costs, are available on request. Growing savings and greater profits from new applications are coming in every day.

The Complete Standard System

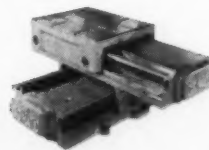
The DIGIMATIC* MODEL 202 Control System includes all equipment necessary for numerical control of point positioning operations.

- **Special Punch Tape Preparation Unit** that is as simple to operate as an adding machine. No complicated computer language to learn.
- **Control Console**—a compact unit, operator-maintained, with shop-proven reliability.
- **Servo Table**—adapted to drilling machines in one day. Automatic positioning on ball bearing ways. Anti-backlash lead screws.

Write for free 12-page booklet "DIGIMATIC MODEL 202." Also—movies shown at your shop or plant on request.



Tape Unit



Table

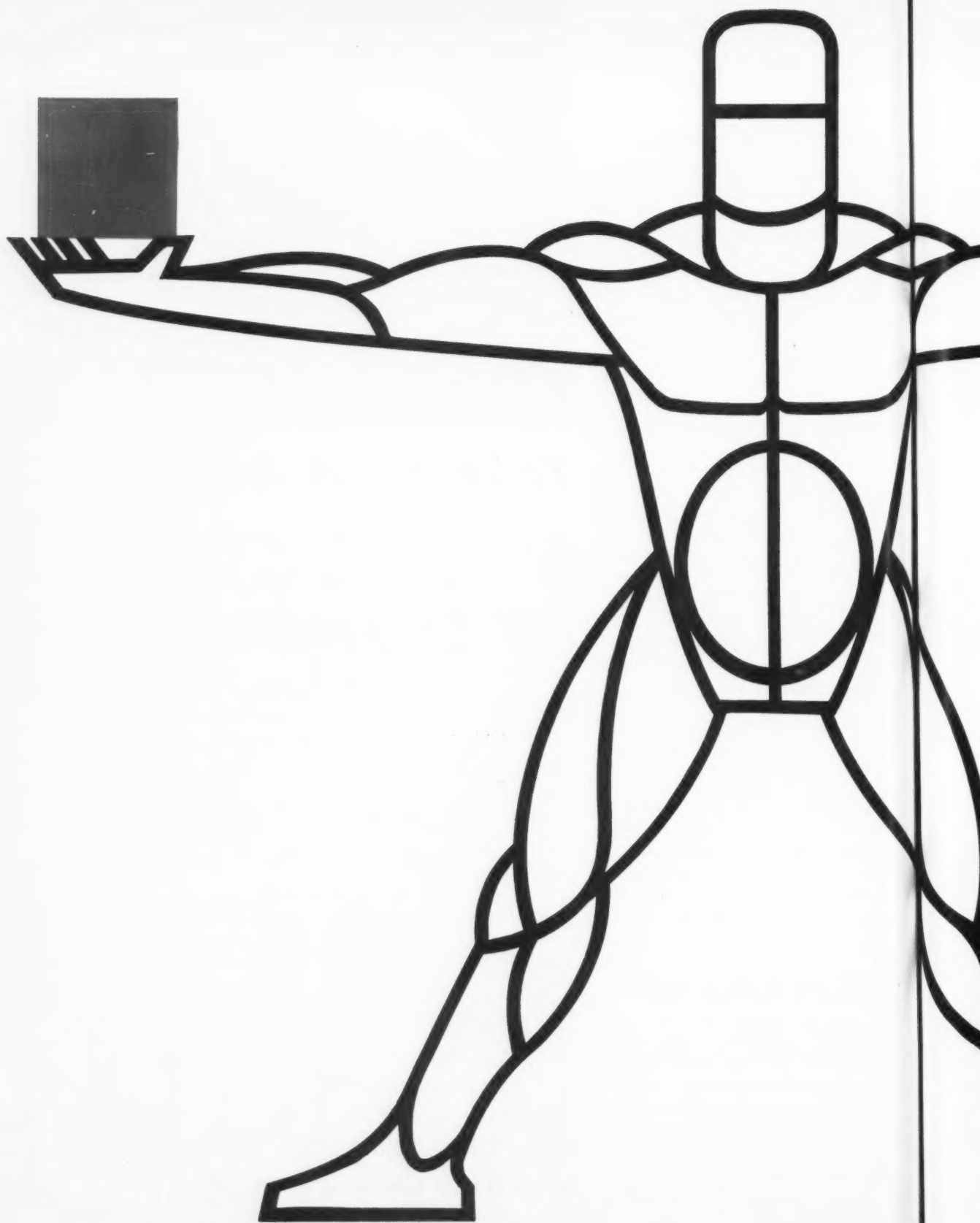


Control Console

*DIGIMATIC IS OUR TRADEMARK

STROMBERG-CARLSON
A DIVISION OF GENERAL DYNAMICS CORPORATION
1490 N. GOODMAN STREET • ROCHESTER 3, N.Y.







THE GREAT STRENGTH OF
N-A-XTRA
LETS YOU ELIMINATE COSTLY
DEAD WEIGHT FROM YOUR PRODUCTS

N-A-XTRA is the best low-alloy, extra high-strength steel you can buy. Heat-treated, fully quenched and tempered, it's now available in minimum yield strength levels of 80,000—110,000 psi. This is nearly three times the strength of ordinary carbon steel.

The great strength of N-A-XTRA gives engineers and designers a unique opportunity to eliminate bulky, useless dead weight from finished products. Production men will delight in its superior formability and superb weldability. Send today for our illustrated brochure on N-A-XTRA HIGH-STRENGTH steel. Great Lakes Steel Corporation, Detroit 29, Michigan, Dept. A-8.

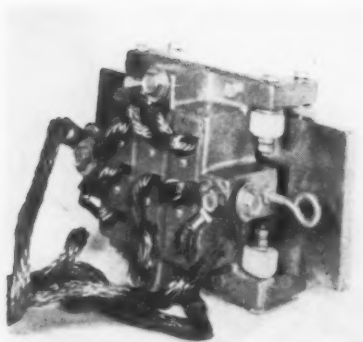


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A DIVISION OF NATIONAL STEEL CORPORATION



New Materials and Components

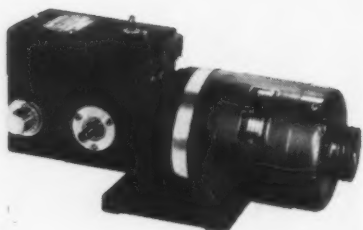


Mobile Pickup Trolley Handles High Current

A trolley-type high-current pick-up device handles up to 1200 amp. Basically designed for welding and plating systems, it's suitable for any high-current application. Traveling on a bus bar (rail), it transmits high-current power while in motion or at rest. Roller-mounted on nylon rollers requiring no lubrication, it can be applied to curved or straight

bus-bar sections. Installation and maintenance are simple and can be performed by regular personnel. It is available in various brush combinations to suit a broad range of application requirements up to 1200 amp. The body is cast aluminum, with towing hooks and cables supplied to specifications. (Anchor Steel and Conveyor Co.)

For more data circle No. 1 on postcard, p. 127

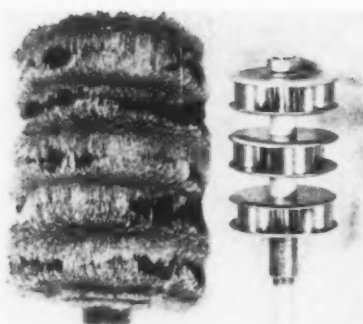


Variable Speed Drive for Precision Setting

An infinitely variable speed drive has a vernier dial for precision speed setting, and two additional high slewing speeds. Ideal for many automatic control applications requiring accurate speed control with quick reset, it's offered in several

sizes, from subminiature up to ¼ hp. The 10-turn vernier dial can be set for any speed from zero to full speed. Then forward or reverse speed is obtained by moving the control switch right or left. (Humphrey, Inc.)

For more data circle No. 2 on postcard, p. 127

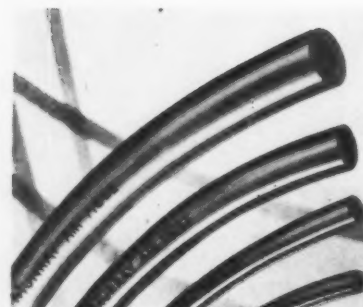


Removes Iron Chips from Hydraulic Reservoirs

New Joint Industrial Committee standards call for Magnetic equipment in hydraulic reservoirs to catch iron particles that escape the filter. Designed to meet these standards, a magnetic device removes ferrous particles. It comes in eight sizes, to handle reservoirs from 10 to 350 gal. Each magnetic unit has

three Alnico-V magnets and two pole pieces, mounted on a brass tie rod. Designed to go through a 2-in. pipe plug opening, the unit is easily installed. Support rods of any length can be supplied. The unit is easily cleaned by blowing off with compressed air. (The Kebby Co.)

For more data circle No. 3 on postcard, p. 127



Plastic Air Hose Is Tough and Durable

Unaffected by oil or grease, this plastic air hose will not collapse under vacuum, resists abrasion well, and is unaffected by most corrosives. It is recommended for use on machine and hand tools, pneumatic lines, and similar applications. Suitable for continuous or

intermittent use, it will carry 350 cfm at 125 psi (½-in.-ID size). Furnished in 100-ft lengths in a brilliant red color, it accepts most standard tube fittings, and has been fully tested with Parker hose fittings. (Munray Products Inc., Div. of Fanner Mfg. Co.)

For more data circle No. 4 on postcard, p. 127



POSITIVE DUPLICATION—EVERY TIME!



From a given point, the needles of these compasses always point to the earth's magnetic poles . . . an important aid to exploration and navigation.

The **PD**° marking on these CINCINNATI Surface Grinding Wheels (and *all* CINCINNATI WHEELS) points to an important and remarkable quality . . . Positive Duplication, time after time after time.

CINCINNATI **PD** WHEELS do a better job for you, because 36 separate quality control steps in the unique **PD** process result in wheels of unsurpassed uniformity.

UNIFORMITY TO YOUR ADVANTAGE

Perhaps every wheel manufacturer has complained about the weather and its changing effects on the product. But Cincinnati has followed Mark Twain's advice and has done something about the weather.

Temperature and humidity of the Mold Room

*Trade Mark Reg. U.S. Pat. Off.

are controlled at exact, unchanging levels—every hour of every day *throughout the year!* In addition, **PD** vitrified wheels are fired in a tunnel in unvarying conditions of atmospheric control at critical sections within the kiln.

Result: Each of your re-order **PD** wheels will act and grind exactly like the original wheel.

CALL CINCINNATI

For experienced help in cutting costs, in grinding machine setups and operations, there are Cincinnati grinding specialists available to you. Call your CINCINNATI **PD** GRINDING WHEELS distributor, today, or contact Cincinnati Milling Products Division, Cincinnati 9, Ohio.



A PRODUCTION-PROVED PRODUCT OF THE CINCINNATI MILLING MACHINE CO.

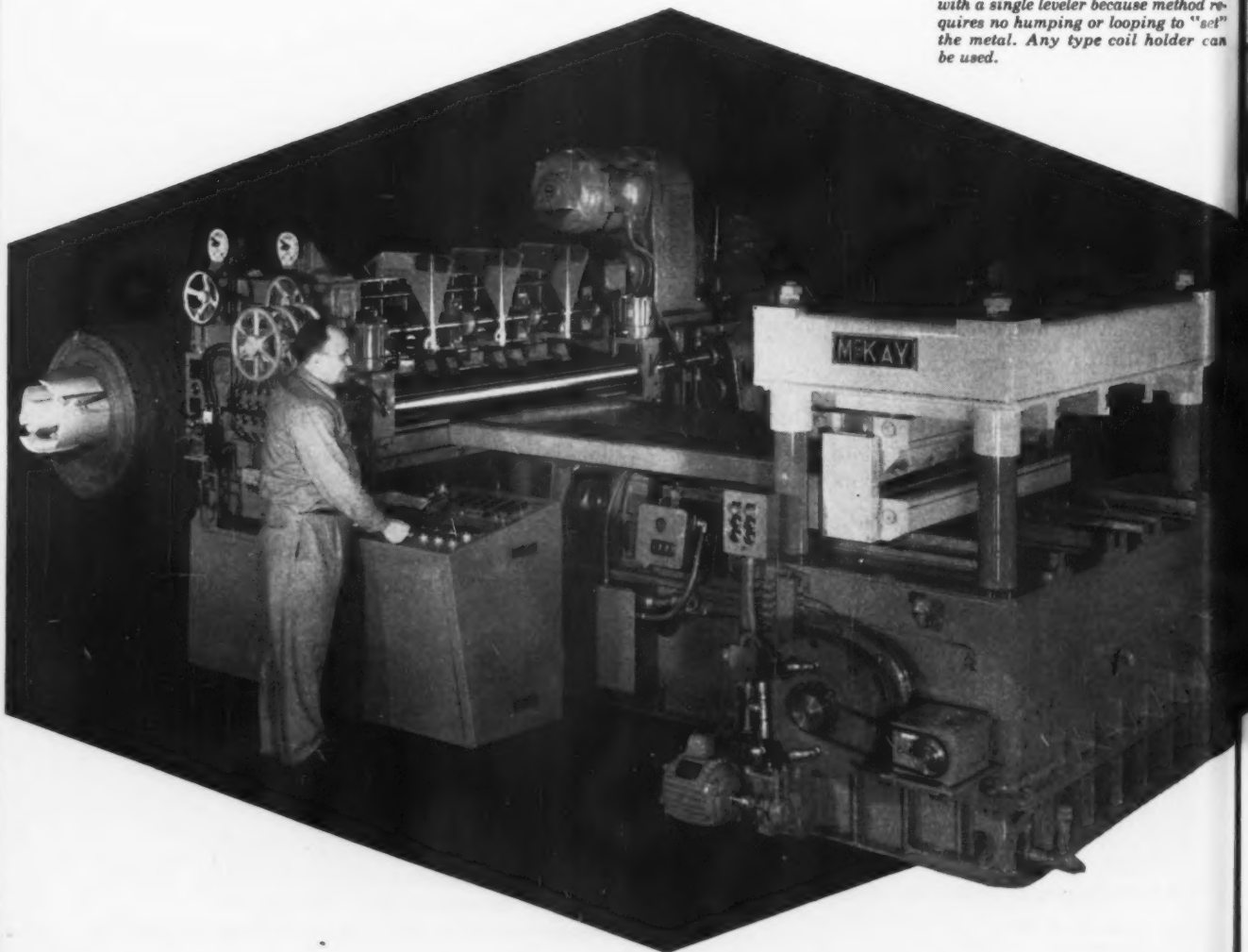


AUTOMATIC, INSTANTANEOUS because of highly accurate electronic counting and measuring mechanisms. Operator simply sets length and quantity by push buttons, shear does the rest. Punched tape or coded card control available.

LOW MAINTENANCE because all drives and controls are simplified AC type, electronic controls are proven standards, cutting dies are standard double-rake shear knives.

Break

COMMERCIALLY FLAT SHEET is possible with a single leveler because method requires no humping or looping to "set" the metal. Any type coil holder can be used.

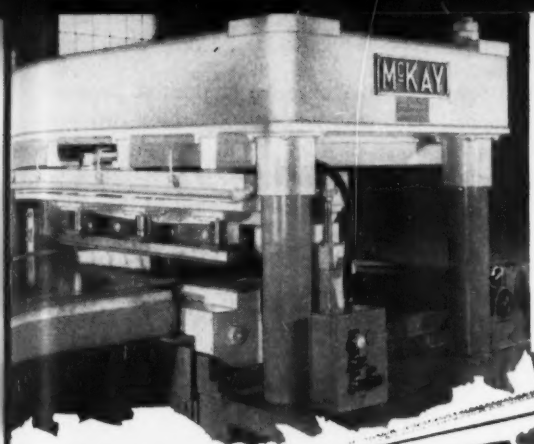


COMPACT . . . never before has such a high production unit required so little area. Space saving, it's ideal for warehouse operations.

drives
type,
standards,
e-rake

possible
method re-
to "set"
ler can

ired so li



through...

in **AUTOMATIC SHEARING**

Revolutionary McKaymatic*
high production Die Shear line
instantly responds to
length and Quantity Command

Now—a high production cut-to-length line that
meets *all* the requirements of modern day coil shearing.
It's the revolutionary new McKaymatic* Die Shear Line and
it's fast, extremely accurate, instantly adjusted, compact and relatively
low in cost!

The McKaymatic* is applicable for use wherever sheet metal is used. Ferrous
and non-ferrous mills, fabricators or warehouses should see this amazing new line before
they decide on the purchase of new coil shearing equipment.

UNMATCHED FLEXIBILITY offered by a simplified electronic control makes the changing of
length of cut instantaneous. When length and quantity commands are changed (manually or automatically)
the line reacts instantaneously without slowing down or stopping. **EXACTING ACCURACY**, also a product of
electronics, is equal to or better than any other available equipment. **HIGH PRODUCTION**, regardless of the number
of length changes is possible because there is no downtime for length changing, etc. **LOW MAINTENANCE** is possible
because the line is designed around simple AC drives and controls, and proven electronic components.

There's nothing like it—for large orders or small—in any width or thickness. Here for the first time is practical push
button shearing, and it's easily adapted for standard coded card or punched tape systems. For details write today.
The McKay Machine Company, Youngstown 1, Ohio.

*TM

McKAY
McK
MACHINE

DESIGN DIGEST

Super-Strength Steel

Experimental fabrication has been announced of cylinders of strip-wound paper-thin steel, capable of withstanding stress more than five times greater than structural steel used in skyscrapers. Static tension ultimate stress of 305,000 psi was achieved, whereas industry has had difficulty reaching 240,000 psi in a single thickness of sheet either

spun or rolled and welded to form a solid-wall cylinder. Experimental work has demonstrated the possibility of attaining the higher psi in extremely thin material—0.008 in.—which is wrapped on a mandrel in several thicknesses, tackwelding, and then resistance-welding through all layers. (Ryan Aeronautical Co.)

For more data circle No. 5 on postcard, p. 127

Supervisory Switch

A new supervisory switch for fluid or gas control may be used for

either negative or positive pressure, or the difference between two pressures. It is diaphragm-actuated, with a micro-switch to open or close the circuit, and always "fails



safe." Easily installed and adjusted, it has 6-in. diam and 5-in. overall height. The micro-switch has a 15-amp capacity. (Dewey Gas Furnace Co.)

For more data circle No. 6 on postcard, p. 127

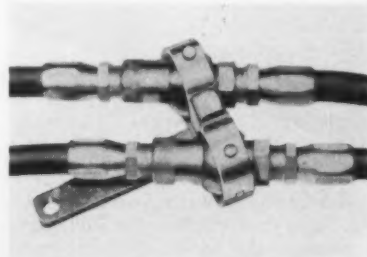
Steel Electrocleaner

A heavy-duty, high-conductivity anodic cleaner for steel is available. It rapidly removes smut, oil, and solid dirt, and produces a clean, water-break-free surface. Furnished as a powder, it is dissolved in water 8 to 12 oz per gal, and operated at 180° to 200°F. High current densities of up to 100 amp per sq ft can be attained to promote fast cleaning action. (Enthone, Inc.)

For more data circle No. 7 on postcard, p. 127

Breakaway Coupling

A push-pull hydraulic coupling in three configurations and a swivel breakaway frame are available. The coupling permits easy connection



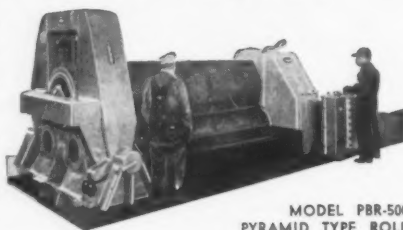
and disconnection on hydraulic systems with pressures to 3000 psi. It seals positively at all times, and allows full fluid flow with only negligible pressure drop. The swivel

WEBB

PLATE FABRICATING MACHINERY

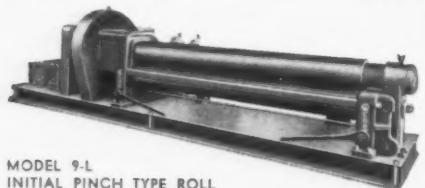
PLATE BENDING ROLLS

The Webb Corporation offers a complete line of Plate Bending Rolls for the rolling of the thinnest plate up to plate 2 1/2" thick. Offered in a variety of lengths and thicknesses. Constructed for the modern fabricating shop.



MODEL PBR-500
PYRAMID TYPE ROLL

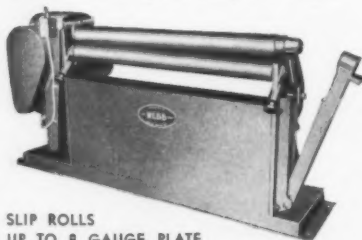
Two types available: the Initial Pinch Type and Pyramid Type machines. All latest advantages of today's modern machine tools are incorporated, utilizing anti-friction bearings, totally enclosed gear drives. Special forming rolls for culvert pipe, stock tanks and other special shapes available.



MODEL 9-L
INITIAL PINCH TYPE ROLL

SLIP ROLLS

A complete line of small Sheet Metal Forming Rolls are also available. All power-driven with shaft sizes 3" to 5" for the handling of the thinnest gauge material, up to 8 gauge material. Special rolls for the forming of polished sheets, aluminum and stainless steels can be furnished. Complete catalogues on any size machine furnished upon request; write Dept. E.



SLIP ROLLS
UP TO 8 GAUGE PLATE

Let Speed **PAY**-The **WEBB** Way!



SLIP ROLLS



PYRAMID TYPE ROLL



INITIAL TYPE ROLL



STEELWORKERS

Since 1881
THE WEBB CORP.

WEBB CITY, MO., U. S. A.

frame eliminates side thrust as a source of coupling wear and leakage. Sizes from 1/2 to 1 1/16 in. are available. (Aeroquip Corp.)

For more data circle No. 8 on postcard, p. 127

Refractory Material

A new economical refractory material is announced for use where continual servicing is required. It is also useful for emergency repairs. It is a gunning mix usable with all types of wet mix or nozzle mix

equipment, and can also be trowelled into place. It is serviceable to 2500°F. (Plibrico Co.)

For more data circle No. 9 on postcard, p. 127

Sprayable Belt Dressing

Safe to apply because it comes in aerosol form and can be sprayed on moving transmission belts, is a new belt dressing. Held at a distance from the pulley, it is applied while drive is running, and the rotation of the pulley transfers the film to the

inner surface of the belt. It can be used on V-, rubber, fabric, or leather belts. (Graton & Knight Co.)

For more data circle No. 10 on postcard, p. 127

Foundry Core Paste

Coming as a fine, tan-colored powder that is easily mixed with water, a new core paste offers special advantages. It is creamy over a wide consistency range, compresses to a very thin joint, and is extremely fast drying. It also has



AT PUBLIC AUCTION MACHINERY AND EQUIPMENT of the FABRICATION DIVISION

A. L. SMITH IRON CO.

— Welded Steel Fabricators —

To be sold — on the premises

200 BENT ST., CAMBRIDGE, MASS.

TUESDAY, JUNE 30, 1959 Starting at 10:00 A. M.

Please Note:

This is a sale only of the machinery and equipment of the Fabrication Division of the company, and has no bearing whatsoever on the company's Smithcraft Lighting Division.

THE SALE INCLUDES:

Cincinnati Power Squaring Shear 12'x1/4" cap. Niagara Heavy Duty Power Plate Shear 5 1/2'x3/8" cap. Marvel Band Saws. Johnson Horiz. Metal Saw. Delta Motorized Floor Drills, Exc. Fairbanks, and Snider Drill Presses, Double End Grinders. I-R Y-Type 30 Air Compressors, 5 & 3x3/2; I-R Single Stage Air Comp., 8x8.

Bertsch Steel Plate Rolls, 12'x1/4" cap. Webb Sliproll Forming Rolls, 4'x5/16" cap. Ransome, and Worth. Positioners, Man-savers 5-ton, Steam Jenneys. Paint Spray Booth 10' with Water Pump System. Buffalo Vertical Angle Bending Rolls, 3x3x3/8" cap.

2 Shatz Ironworkers, Long & Allstatter Heavy Duty Double End Punch Press, Alex Beaudry Duplex Punch Press, H-D Single Punch Press, Perkins Power Press Mod-300.

65 Lincoln, G.E., Hobart and Westinghouse Portable Shield Arc and Flex Arc Electric Welders, ass't. styles, 200/300 Amps, 220/440/550 Volts AC/DC. Airco 10-Cyl. Manifold, Oxygen Burning Machine, Airco Wand Flux Recovery Unit No-552, Airco Radiograph, and Monograph. G.E. 10-KW Hi Cycle Motor Generator.

West Consumable Electrode Welder with Dynamic Reactor 300/600 Amps, 3 Transformers 15 KVA, Nelson Stud Welder, Thompson Spot Welder 30-KVA, Type E24, Welding Torches, Trucks & Equip.

MISC.: Silent Glow Heaters, Electric, and Manual Chain Hoists, Trolleys, I-Beams, Chain Slings, Slag Guns, and Hammers, Clamps, Plate Grabs, Sockets, Punches, Taps, Dies, Reamers, Drills, Saw Blades, Files, Steel Tub Skids, Work Tables and Stands.

DeVilbiss SP 50 Paint Spray Booth, 24'x26'x12 1/2' High.

Chev. Panel Body Maintenance Truck 1953.

Sale is by order of the Owner

Illustrated Brochure and Detailed Catalog upon request

Samuel T. Freeman & Co., Auctioneers

Over a century and a half of selling at auction

80 FEDERAL STREET, BOSTON 10, MASS.

1808-10 Chestnut Street, Philadelphia 3, Pa.

Plasticool is a resin coating which is easy to apply ...and economical! It is available in non-yellowing white as well as tint colors. Plasticool reflects virtually all of the Sun's heat rays and maintains shade temperatures inside coated structures.

Plasticool may also be applied to composition shingle, aluminum, asphalt or gravel roofs. Write for free literature today!

Plasticool

HEAT REFLECTIVE COATING

will keep

STEEL BUILDINGS

as much as

45° COOLER

- Industrial factory and warehouse buildings
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- Commercial buildings
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Coating Laboratories

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319 SOUTH QUINCY • TULSA, OKLAHOMA

GOSS and DE LEEUW

MULTIPLE SPINDLE

CHUCKING MACHINES

Four, Five, Six, Eight Spindles • Work and Tool Rotating Type

GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.



ARMSTRONG Drop Forged EYE BOLTS

Drop forged from the best mild steel, heat treated to increased tensile strength and proof-tested to 50% beyond rated "safe working load," ARMSTRONG Eye Bolts are strong, dependable and safe. Blank or threaded, "Plain or Shoulder" patterns. 16 standard sizes and special lengths. Write for Catalog.

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it's Jewel Bright
takes tough twists without
FLAKING, POWDERING, or PEELING

CONTINENTAL®
Brytite®
A PATENTED GALVANIZING PROCESS

CHAIN QUALITY WIRE

The Zinc Coated Wire with the Plated Look

Brytite Wire is so shiny bright and satin smooth that electroplating and special finishing operations are not needed—a valuable saving in labor and materials! The coating is so tight that it withstands severe deformation of the base metal—takes hard turns and twists without flaking, powdering, or peeling.

In Many Sizes, Finishes, Tempers and Analyses
Specify BRYTITE in Satin Finish, Unwiped, or redrawn (in certain sizes) . . . in various tempers and analyses in low carbon and medium low carbon steels . . . for quality weldless or twisted wire chain, or wherever long-lasting brightness is desired. Special shapes, too.

Free Manual of Continental Manufacturers' Wire. Contains details of BRYTITE and other types of Continental Wire. Write for copy.

Fine Finishes in Manufacturers' Wire

CONTINENTAL STEEL
CORPORATION—KOKOMO, INDIANA

PRODUCERS OF: Manufacturers' Wire in many sizes, tempers and finishes, including Galvanized, KOKOTE, Flame Sealed, Coppered, Tinned, BRYTITE, Annealed, Liquor-Finished, Bright, and Special Shaped Wire. Also Reinforcing and Galvanized Fabric, Nails, Continental Chain Link Fence, and other products.



DESIGN DIGEST

high tensile strength—up to 290 lb. (Frederic B. Stevens, Inc.)

For more data circle No. 11 on postcard, p. 127

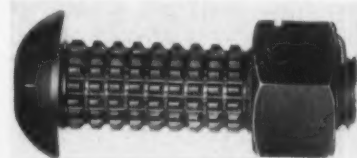
Burnishing Compound

Using the newest concepts of chelation, lubrication, and a buffered pH, a new stainless steel burnishing compound develops high lustrous finishes fast, and without scratching, darkening, or developing smuts. (Patelin Chemical Co., Inc.)

For more data circle No. 12 on postcard, p. 127

Rib Bolts with Lock Nuts

With relatively hard ribs and a taper at the start of the ribs, a rib bolt drives easily. The bolt is in bearing even before the joint is loaded. The self-locking nut is recommended wherever high clamping



force is not required or cannot be obtained due to difficulty in torquing the unit. (Automatic Nut Co., Inc.)

For more data circle No. 13 on postcard, p. 127

Carbide Compositions

Two new compositions, a binderless carbide of tantalum and tungsten and a tungsten carbide with chrome-cobalt binder, are available for corrosion-wear parts. The first has found use in wear parts in magnetic wire and tape, because of its non-magnetism, and in valves, orifices, and compacting dies. The second has excellent wear resistance for less severe corrosive conditions, and is being tested in similar applications. (Kennametal Inc.)

For more data circle No. 14 on postcard, p. 127

Protective Coating

Development is announced of a protective coating for in-shop protection of metallic and nonmetallic surfaces during storage, forming,

and fabricating operations. Offering protection comparable to that of zinc chromate primer, it is far more easily removed, being soluble in solvent or alkali. Sprayed on material upon receipt of raw stock, it remains on during working, and is easily removed during cleaning for final surface preparation. It offers excellent abrasive resistance, repels moisture, and protects against corrosion and scratches. (Turco Products, Inc.)

For more data circle No. 15 on postcard, p. 127

Alumina Refractory

An 80-pct alumina plastic refractory combines all the advantages of monolithic construction, formerly available only in castables and ramming mixes, with the advantages of plastic construction. It is recommended for balancing refractory linings in high-temperature furnace installations, and for linings where iron oxide and molten aluminum are prime causes of failure. Packaged in densified deaired slabs, it is easily workable and quickly installed, and withstands temperatures to 3200°F. (Refractories Div., H. K. Porter Co.)

For more data circle No. 16 on postcard, p. 127

Anti-Seizing Compound

A specialized lubricant serves as an effective anti-friction, anti-seize compound. It can protect machine slides and lathe dead centers from excessive frictional wear, serve as a drawing and forming compound, or eliminate seizing and galling in press fitting, keyway lubrication, and other high-pressure uses. (Keystone Lubricating Co.)

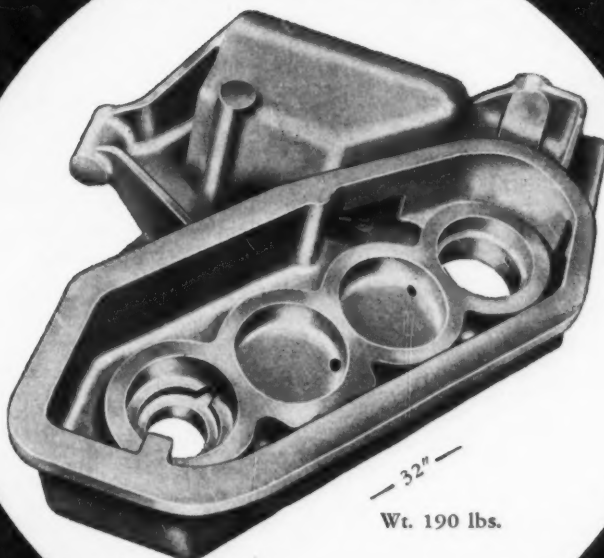
For more data circle No. 60 on postcard, p. 127

Super-Strength Bolts

Steel bolts with self-locking nuts, with minimum tensile strength of 260,000 psi, are announced for aircraft, missile, and other applications. (Standard Pressed Steel Co.)

For more data circle No. 61 on postcard, p. 127

URICK'S URITE GRAY IRON



— 32" —
Wt. 190 lbs.

Courtesy Euclid Division General Motors, Cleveland

GEARED TO THE JOB

URICK Foundry's integrated sales and engineering departments are geared directly to the production department—all working together to supply high quality gray iron castings with dimensional stability, uniform density, and high machinability.

From the planning stage, all the way to the finished part, URITE gray iron castings are designed and engineered to deliver greater tensile strength in relation to the service required, and in many cases with less weight. URITE gray iron is better because it is cast with fine flake graphite uniformly distributed throughout the iron matrix.

URICK'S modern facilities, manned by a competent co-operative team, produces quantities of high grade castings to meet the most demanding schedules.

Contact URICK, the foundry that starts with "U" and stays with you. Write for advanced technical data about URITE gray iron castings.



URICK FOUNDRY

DEPT. A2, ERIE, PENNSYLVANIA

HOW

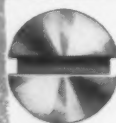
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getting the quality
you want*



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here*



at the Phillips recess — developed by American — for consistent depth and dimension. Without these, both fasteners and your product are damaged by cam-out, burring and distortion. Those costs come out of your profits. American gives you this mark of quality because its dies are designed to maintain this quality at the end of the run as well as the beginning.



*Look
here*



at slotted fasteners that are cut clean and true to the head size. Poor slots give you poor driver engagement . . . take longer to drive, cost more in labor . . . and it all comes out of your profits. And remember to check the slots at the end of the run as well as the beginning, for only quality equipment and attention to detail can give you consistent quality . . . which you get from American.

**Profit
Improvement
Program**

Quality fasteners cost more to produce . . . improve your profits when used!

Buy here

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SCREW COMPANY

Williamston, Conn. • Detroit, Mich. • Chicago, Ill.

FREE TECHNICAL LITERATURE

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 127.

Vibration Recorder

A small, non-electric, hand vibrograph makes a tape recording of machine vibration amplitude. It enables taking periodic readings of vibration amplitude to provide information on bearing or cutting-tool wear. It is described in a bulletin. (The Korfund Co., Inc.)

For free copy circle No. 17 on postcard, p. 127

Atom Quality Control

A four-page brochure explains how radioisotopes provide optimum quality control in continuous-process operations, mentions some ap-

plications, and describes characteristics and uses of a line of nuclear thickness and density gages. (Radiation Counter Laboratories, Inc.)

For free copy circle No. 18 on postcard, p. 127

Semi-Tubular Rivets

"Dimensional Standards for Semi-Tubular Rivets" is a guide designed to facilitate the work of industrial rivet users. Standards data are presented in chart form. (Tubular and Split Rivet Council)

For free copy circle No. 19 on postcard, p. 127

Spacing Products

A line of spacing products, including heavy, machined collars, feeler stock, brass and steel shim stock, and a complete line of arbor spacers and shims, is described in three new catalog inserts. (Detroit Stamping Co.)

For free copy circle No. 20 on postcard, p. 127

COWLES ROTARY KNIVES

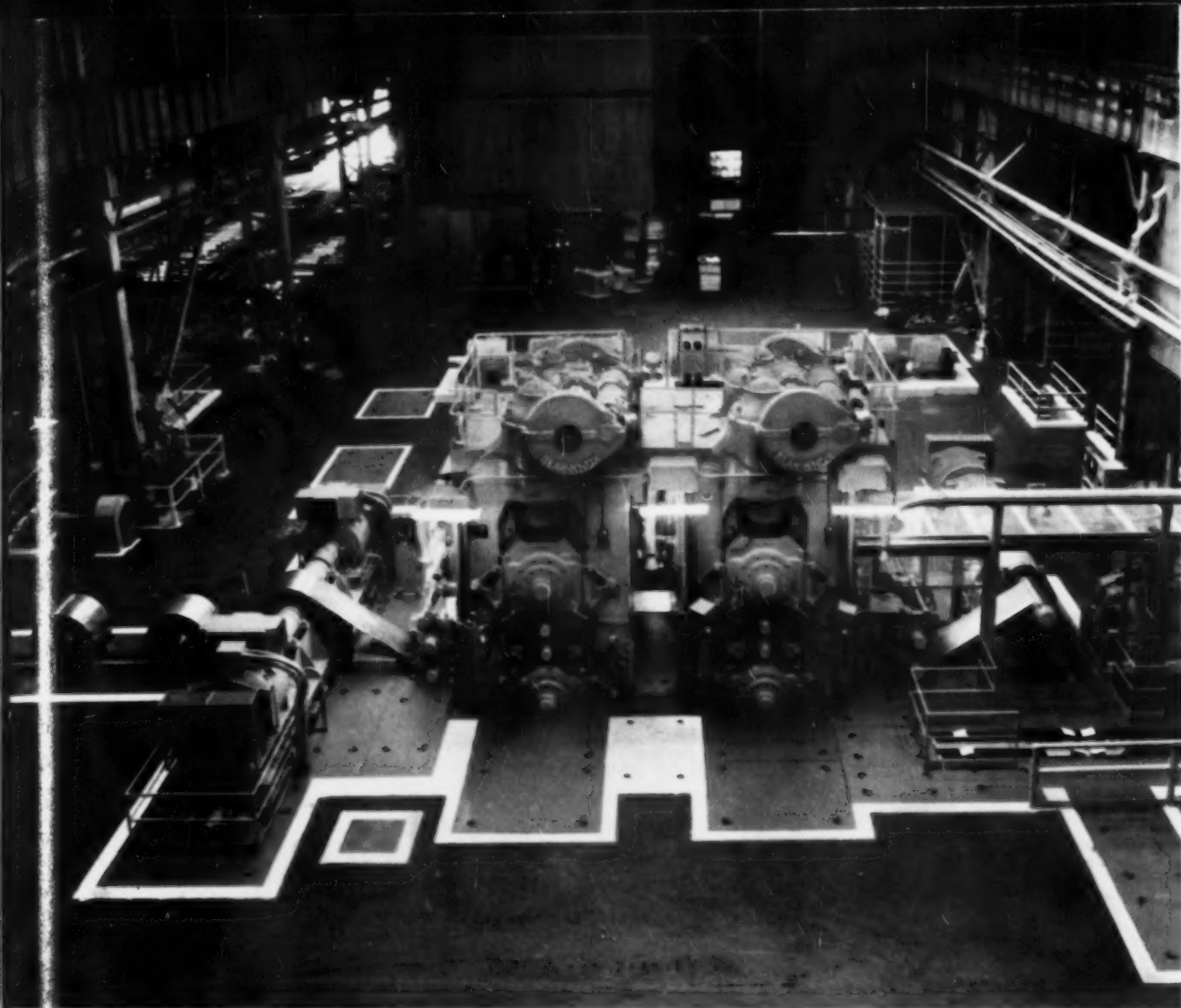
Complete line. We can furnish knives of correct analysis, including carbide, to slit any ferrous or non-ferrous material. For quick, accurate set-up and clean, sharp cuts, specify "Cowles", world's largest manufacturer of Rotary Slitting Knives.

COWLES TOOL COMPANY

2060 WEST 110th STREET
CLEVELAND 2, OHIO

Write for
New, Fully
Illustrated
Bul. No. 571
Today!





19- and 53-inch x 48-inch high speed 2-stand Temper Mill at the Fairfield, Alabama, works of the Tennessee Coal and Iron Division of the United States Steel Corporation.

BLAW-KNOX TEMPER MILLS

Blaw-Knox designs and builds a full range of two high and four high Temper Mills for integration into sheet, strip, and tin plate processing operations. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations and auxiliary equipment for ferrous and non-ferrous metals, sheet and strip processing equipment, electrolytic

tinning, annealing, and galvanizing lines, seamless pipe and tube mills, draw benches, and cold draw equipment, Blaw-Knox Medart cold finishing equipment, iron, alloy iron and steel rolls, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.



BLAW-KNOX COMPANY

*Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania*



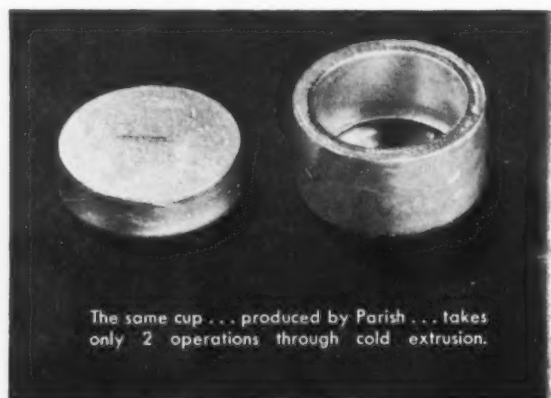
Forming this cup in the traditional manner takes five costly and time-consuming operations.

Precise metal forming simplified

PARISH ingenuity speeds production, cuts cost

Even at its new lower cost, the Parish part is more accurate than those produced by the old-fashioned 5-step forming process. The difference is Parish experience and ingenuity . . . the ability to recognize that there's a simpler, faster, cost-cutting way to turn out high quality production in volume.

Look at the benefits! By streamlining this operation from 5 stages down to 2 . . . with the aid of the latest high-impact presses . . . Parish engineers cut the cost and time for tooling,



The same cup . . . produced by Parish . . . takes only 2 operations through cold extrusion.

doubled the rate of production, and delivered the parts at a new low price.

Parish facilities, ingenuity and skill may help you cut the cost of large and small parts requiring stamping, machining, heat-treating, welding, balancing and assembly.

Why not increase your margin of profit by writing Parish today? Your inquiry will receive prompt attention.

● DANA PRODUCTS: Transmissions • Universal Joints • Propeller Shafts • Axles • Torque Converters • Gear Boxes • Power Take-offs • Power Take-off Joints • Rail Car Drives • Railway Generator Drives • Stampings • Spicer and Auburn Clutches • Parish Frames • Spicer Frames • Forgings





PARISH

PRESSED STEEL

Division of Dana Corporation Reading, Penna.

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FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Precision Components

Ten thousand stock precision items, such as gears, shafts, collars, couplings, speed reducers, and differentials, are listed in a 416-page master catalog. Technical Data, Breadboard Kit, and Precision Tool Components sections are included. (PIC Design Corp.)

For free copy circle No. 21 on postcard

Low-Headroom Hoists

A complete line of low-headroom hoists, in five classes to lift anything from 1/4 to 12 tons, is described in a 34-page booklet. (American Engineering Co.)

For free copy circle No. 22 on postcard

Brazing Stop-Off

A stop-off material for brazing alloy flow control is described in a data sheet listing uses and properties. Application recommendations and instructions for removal after brazing are included. (Wall Colmonoy Corp.)

For free copy circle No. 23 on postcard

Steel Strapping Tools

A line of hand-operated steel strapping tools with unlimited take-up is illustrated in a brochure. (Stanley Steel Strapping, Div. of The Stanley Works)

For free copy circle No. 24 on postcard

Tap and Gage Chart

The first complete tap and gage selector chart ever compiled is offered. It lists the manufacturer's line of taps, and the tap drill sizes and plug and ring gages needed to pro-

duce and check classes of thread. All standard NC and NF sizes are listed, as well as many NEF and N sizes. (The DoALL Co.)

For free copy circle No. 25 on postcard

Machine Replacement

A 14-page brochure shows how replacement of old machines paid off for six manufacturers, and points out that there's a mathematically right time to replace a machine tool. (The Heald Machine Co.)

For free copy circle No. 26 on postcard

Refractory Cements

A 16-page booklet covers a line of cements, mortars, and coatings, and gives application instructions and some suggestions for selection of the proper product. (Mexico Refractories Co.)

For free copy circle No. 27 on postcard

Adjustable Speed Drives

A specifications bulletin describes a line of adjustable speed drives, electronic and non-electronic, 1/6 to 10 hp, with speed ranges 100:1. (Cleveland Machine Controls, Inc.)

For free copy circle No. 28 on postcard

Strapping and Packing

"Better Ways to Package, Unitize and Ship," a 48-page booklet, contains ideas for improving packaging and shipping in all industries. It also illustrates a line of strapping, tools, and equipment. (Signode Steel Strapping Co.)

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Fractional-hp Motors

A basic line of fractional horsepower electric motors, blowers, and special products is described in a 12-page catalog. Shaded-pole, permanent-split-capacitor, and dc motors are illustrated. (Redmond Co., Inc.)

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Data-Processing System

The large-scale Univac 1105 data-processing system is described in a 55-page manual. A flexible,

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THE IRON AGE

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FREE LITERATURE

high-speed system, it is suited to both scientific problem-solving and business data-processing and data-reduction. (Remington Rand Div. of Sperry Rand Corp.)

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Plate and Face Cams

Standard and semi-standard plate and face cams are listed by stroke, timing, and load rating in an eight-page catalog. Special design services are offered. (Ferguson Machine Corp. of Indiana)

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Counters

A line of mechanical and magnetic counters is illustrated in a condensed four - page catalog. (Veeder-Root Inc.)

For free copy circle No. 33 on postcard

Chromallizing Process

The Chromallizing process, for diffusing chromium and other elements into the surface of metal parts to increase their heat, wear, and corrosion resistance, is shown in 15 commercial applications in a four-page folder. Information is included on the process, the various surfaces it produces, and costs and economies involved. (Chromalloy Corp.)

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Limit Switches

Heavy-duty water- and oil-tight machine-tool limit switches in a new line are described in a 16-page illustrated bulletin. Standard, neutral-position, short-travel, and push-lever models are available. (The National Acme Co.)

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Vacuum Spectrometer

A conference paper presented by a steel manufacturer states that overall time for preparing samples, analysis, and reporting results can be reduced 60 pct through use of a

new vacuum spectrometer, and estimates that it will pay for itself in less than six months. The spectrometer, used in control of melting operations and general analysis of alloys, is accurate and fast in the analysis of all types of iron alloys. (Applied Research Laboratories, Inc.)

For free copy circle No. 36 on postcard

Ultrasonics

A five-page article presents a complete roundup of the subject of ultrasonics and its uses. (Acoustica Associates, Inc.)

For free copy circle No. 37 on postcard

Protective Coatings

A four-page chart, "Comparison of Maintenance Coating Systems," compares 17 standard systems of corrosion-resistant protective coating, showing the strong and weak points of each. Accurate resistance ratings are listed for all major wearing agents and effects. (Carboline Co.)

For free copy circle No. 38 on postcard

Finishes for Aluminum

"Finishes for Aluminum" is a 28-page handbook containing latest information on preparation and treatment of aluminum surfaces. It explains theory and method of five major types of finishing operations, including good and bad points and costs. (Reynolds Metals Co.)

For free copy circle No. 39 on postcard

Cam Index Drives

A two-page engineering data sheet describes a line of standard cam index drives that provide accurate, smooth, fast, and shock-free indexing of heavy-duty work tables on dial and trunnion type machine tools. (Expert Automation Machine Co.)

For free copy circle No. 40 on postcard

Flaw Detector

A four-page bulletin describes magnetic-flux equipment and method for locating invisible defects of all kinds in ferrous parts. (Ferro Machine & Tool Corp.)

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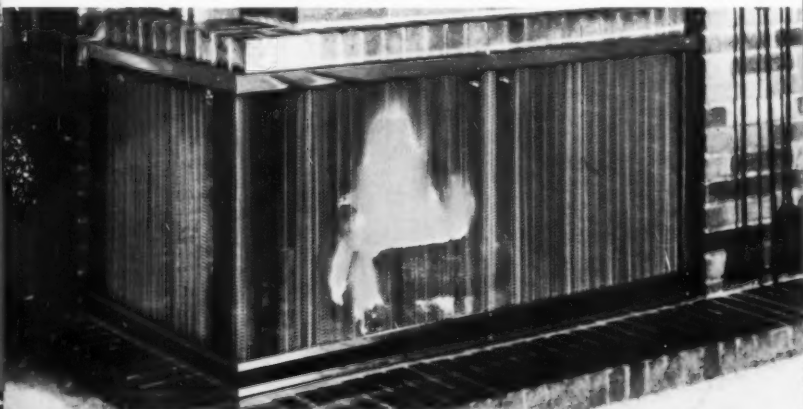
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KEYSTONE WIRE and MODERNSCREEN build a better fire screen

To volume produce fire screen like you see here, Portland Willamette Company, Portland, Oregon, employs incredibly accurate and complicated weaving looms. Successful operation of these automatic machines requires a perfect forming wire—a wire that is absolutely uniform throughout the thousands of feet in the long continuous coils. Modernscreen's wide range of finishes for fireplace screens demands a perfectly clean wire. It's made that way at Keystone and is shipped in moisture-proof fibre drums to protect it until ready to thread into the weaving looms.

Teamwork between Modernscreen and Keystone developed a wire with the necessary uniformity and surface qualities, and a packaging program to protect its extra clean finish. For these reasons, Modernscreen specifies Keystone Wire.



Keystone Wire specialists will work with you to help develop the wire that can enhance the saleability of your product—cut costs—increase quality. Call your Keystone representative today!

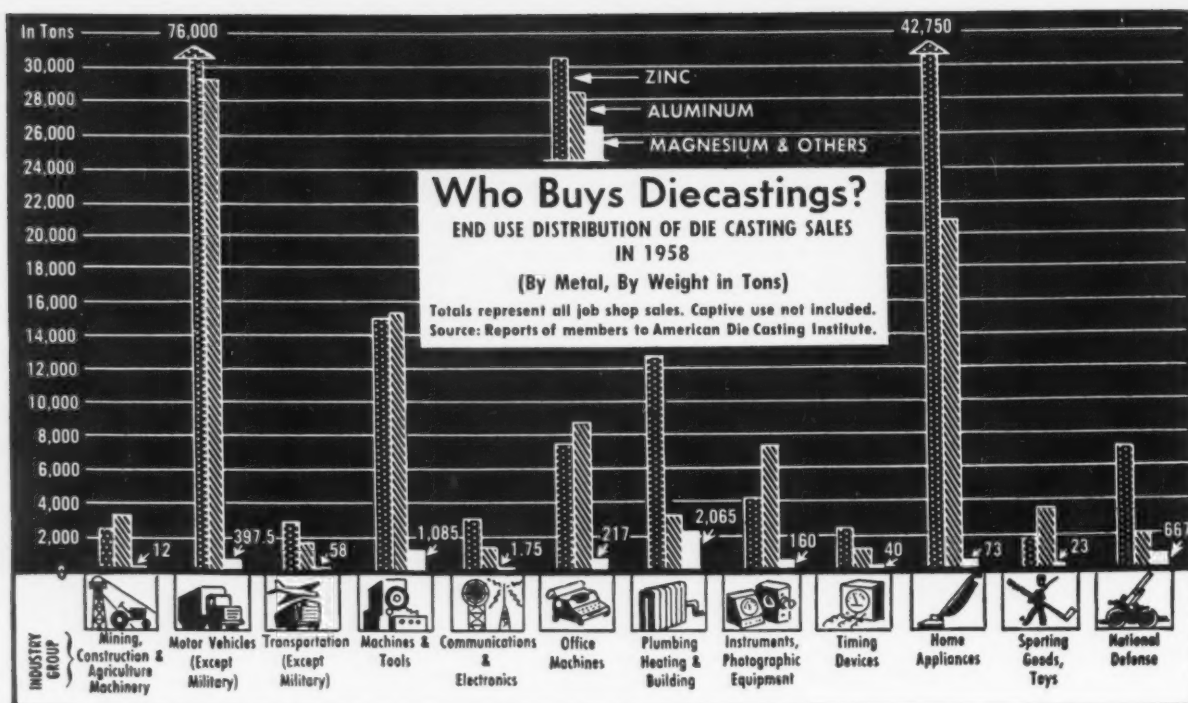
KEYSTONE STEEL & WIRE COMPANY, PEORIA 7, ILLINOIS

KEYSTONE



WIRE FOR INDUSTRY

ACTUAL SIZE



these industries do!

Applications of zinc base die castings are steadily becoming more varied and more widespread. Today, it would be virtually impossible for anyone to go through an ordinary day's routine of living without using—directly or indirectly—an immense number of appliances, devices and services in which zinc alloy die castings form essential parts. The chart above shows sales by job shop die casters in 1958. The superior physical characteristics of zinc as a base metal for die castings is indicated by the fact that in 1958 67% of all die

castings by weight, sold by job shops, were based on zinc.

Die Casting . . . the shortest distance between raw material and finished product . . . is the second largest consumer of zinc and is continuing to expand because of industry's recognition of what the process has proved itself to be: One of the fastest and most economical production techniques at the command of the metal-working industry today.

DIECASTING is the Process.. ZINC, the Metal
BUNKER HILL



BUNKER HILL 99.99+% ZINC

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Sales Office For Pacific Coast

THE BUNKER HILL CO., 680 MARKET STREET, SAN FRANCISCO 4, CALIF.

ZM-128

LUCAS plus "N. P. C."

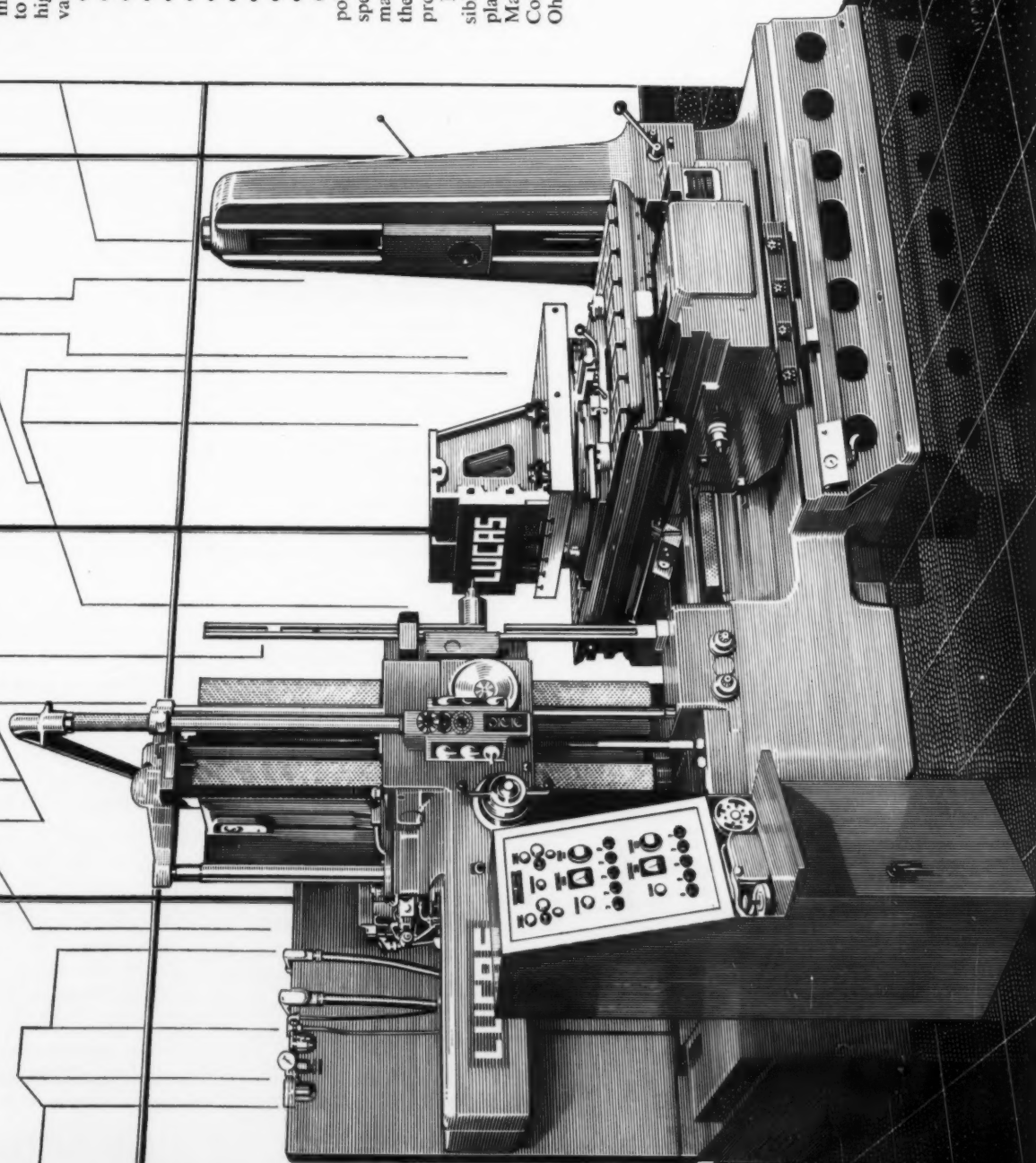
Numerical Positioning Control on any Lucas machine presents advantages that contribute to more production, greater efficiency and a higher degree of accuracy. The individual advantages are as follows:

- Reduces direct and indirect labor
- Eliminates jigs and fixtures
- Eliminates scrap
- Controls production
- Improves quality
- Reduces inventory
- Reduces floor space
- Reduces tool costs
- Simplifies engineering methods
- Makes new methods possible
- Eliminates the human error

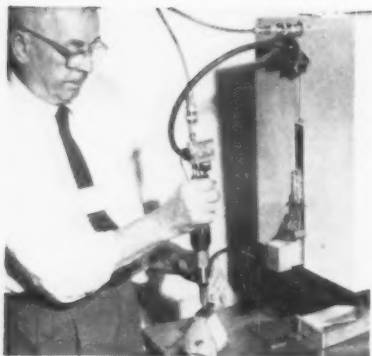
On all Lucas machines with N.P.C., the point to point positioning and changes of speeds and feeds may be controlled by manual selection of the decade switches on the console as well as by punched tape programming.

It will pay you well to investigate the possibilities which this combination offers in your plant. For complete information, write Lucas Machine Division, The New Britain Machine Company, 12302 Kirby Avenue, Cleveland 8, Ohio.

LUCAS
OF
CLEVELAND



New Equipment and Machinery

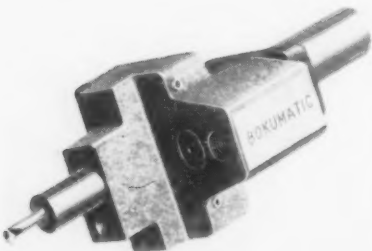


Feeder-Driver for Set Screws Goes Portable

The advantages of automatic socket set screw feeding and driving are now available in a portable machine. Not only can the machine itself be moved from one location to another, but its new gun-type driver receives and drives screws at distances 15 ft or more from the machine. The setup feeds and drives as many as 2000 standard socket set

screws per hour. Screws feed to a selector from a rotating hopper. From the indexing mechanism, each screw is carried by air through a flexible tube to the driving gun. The air-powered gun seats each screw to a preset depth or torque, controlled by a clutch mechanism. Change from one size screw to another takes 20 minutes. (The Bristol Co.)

For more data circle No. 42 on postcard, p. 127



Holder Aids Internal Cutting Tools

A new series of holders for internal tools simplifies and speeds up metalworking operations requiring internal grooving, back chamfering, thread recessing or special internal forming. Actuation is by means of a draw bar, or stop rod against the

spindle or spindle guard. Movement consists of a horizontal, straight-line entry with a dovetail side action during cutting ranging from 0.072 in. per side in the smallest holder to 0.350 on the largest unit. (Bokum Tool Co.)

For more data circle No. 43 on postcard, p. 127

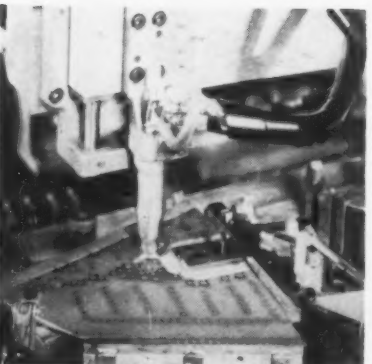


Electric-Discharge Unit Machines in 3D

Designed for the shop where precision is essential, a series of machine tools can produce extrusion dies, powdered-metal dies, cold-heading dies, and three-dimensional cavities at 25-50 pct savings over mechanical methods, according to

the manufacturer. The unit's 3 3/4-in. diam quill travels 10 in. vertically. A complete dielectric oil system consists of reservoir, pumps and filters in the base of the machine. (Elox Corp. of Michigan)

For more data circle No. 44 on postcard, p. 127



Positive-Arc Starting Fires Mechanized Torches

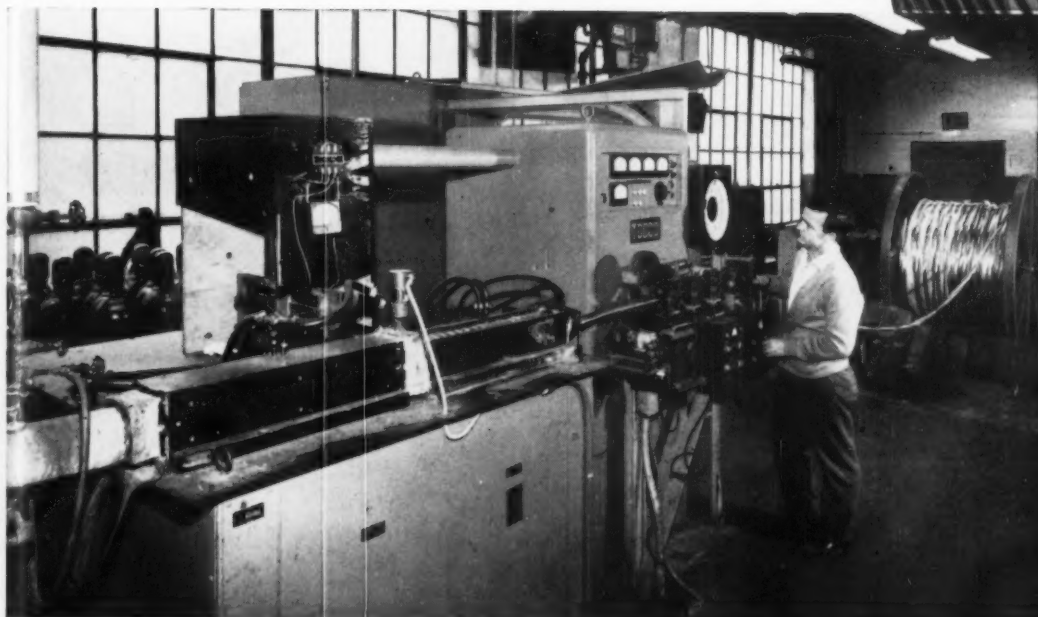
A pilot arc makes it possible to get positive-arc starting for an inert-gas tungsten-arc spot welding or cutting setup. The starting method eliminates all high-frequency interference and avoids the contamination of retract starting. Electrode life is four times longer than with high-frequency starting, with increased reliability. The pilot keeps

a ball of incandescent gas within the cup so that the arc is always ready to fire as soon as potential is applied between torch and work-piece. Current is adjusted to about 5 amp between electrode and water-cooled nozzle. A small quantity of shielding gas protects the electrode while the pilot is on. (Linde Co., Div. of Union Carbide Corp.)

For more data circle No. 45 on postcard, p. 127

How **TOCCO***

Induction Annealing makes copper cable easier to handle in the field . . .



A world famous manufacturer of quality cable now treats its customers to the best with TOCCO-annealed cable that's easier to reel off, easier to splice and generally easier to handle in the field. Cable segments pass continuously through a TOCCO inductor coil at the rate of 23 feet per minute for the 800 mcm material illustrated. Many sizes of cable segments, up to one million circular mils, are annealed on one TOCCO unit.

TOCCO's many advantages over conventional annealing methods include:

1. TOCCO provides "bright annealing"—no discoloration.
2. TOCCO requires just a fraction of the space of conventional bell-type furnaces.
3. TOCCO's output is nearly four times that obtained by conventional annealing methods.
4. TOCCO equipment requires one operator as opposed to three required for the bell-type furnace operation.

Whether your products involve ferrous or non-ferrous materials, look to TOCCO for an econom-

ical solution to your metal heating problems—annealing, brazing, hardening, melting or heating for forming or forging operations.



THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today—NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept. A-6, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening, Heat Treating and Annealing."

Name

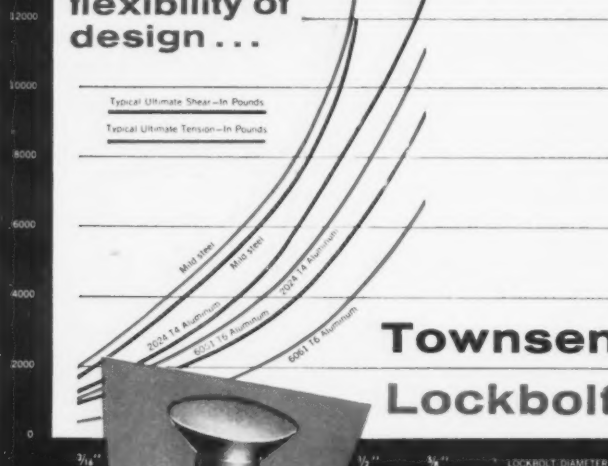
Position

Company

Address

City Zone State

High, uniform tensile pre-load and shear values give greater flexibility of design...



Townsend Lockbolts

Townsend lockbolts* give the designer great flexibility, for they may be used in either shear or tension applications, and have great resistance to fatigue. A high tensile pre-load is imparted to the joint during installation, which gives a very high shear value. No over-design is necessary, because shear and tensile pre-load values are the same in every joint.

The setting gun swages the collar to the locking grooves on the pin, and breaks off the projecting pin tail as a pre-determined break-load is reached. The gun's cycling action cannot be altered, and even men with no special skill can produce strong, uniform, economical joints.

For more information on Townsend lockbolts, request a complete demonstration right at your desk, or write for Bulletin TL-101. Townsend Company, P. O. Box 71-B, Ellwood City, Pa.

Townsend Company

ESTABLISHED 1914

Engineered Fasteners Division

ELLWOOD CITY • PENNSYLVANIA

Cherry River Division • Santa Ana, California

*Licensed under Buck patents
RE 22,792; 2,114,483; 2,527,307;
2,531,048; 2,531,049 and
2,754,703

NEW EQUIPMENT

Carbide Hand Files

Two new series of carbide hand files have been added to a line of these tools. They feature an offset handle, one with a hand knob on the forward end, the other plain. Both are available in a range of five cuts from fine (40 teeth per in.)



to coarse (16 teeth per in.). Hard abrasive materials pose no problem to these files. A cost-cutting re-sharpening service is offered. (Severance Tool Industries Inc.)

For more data circle No. 46 on postcard, p. 127

Paint Spray Unit

Contained in a compact portable unit, a new paint spraying setup discards use of compressed air for transport of paint materials. Instead it uses a hydrocarbon compound atomized by an electronic heating element within the unit. With no mechanical parts for atomization, the setup performs noiselessly. Since molecule weight of the gas formation is 2½ times that of air, the mass of the conveying agent is proportionately larger. Atomizing pressure can be drastically reduced and spray mist cut to a minimum. (The Lofstrand Co.)

For more data circle No. 47 on postcard, p. 127

20-in. Band Saw

A low-cost 20-in. metalcutting band saw allows quick infinite speed selection from 38 to 4100 sfpm, optional automatic power



* "A METALWORKING PROFILE"

modernization turns tough job into easy routine!

Modernization . . . that's the key to saving money! For example, a Chicago foundry recognized they had a handling problem—tapped Whiting's know-how and installed a Whiting Tiger Crane created for the job, to get their required production boost. Now, foundry officials report more efficient hot-metal handling at lowest cost.

What Whiting did for this plant can be done for you! Send for "Metalworking Profiles," a colorful new booklet of performance reports that shows Cranes and other Whiting equipment on the job . . . stepping in to save money for leaders in the metalworking industries. *Whiting Corporation*
15601 Lathrop Avenue, Harvey, Illinois.

87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS

WHITING

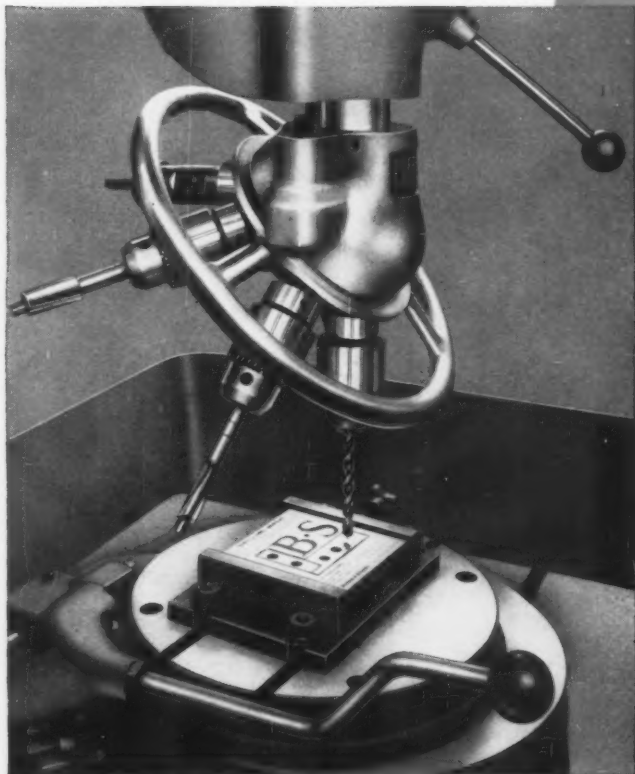
75th year



MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY, RAILROAD AND CHEMICAL PROCESSING EQUIPMENT

THE IRON AGE, June 18, 1959

Now...from Brown & Sharpe's new the turret drilling machines that



The Brown & Sharpe Turret Drilling method utilizes a machine on which all six spindles work on a single axis. As the turret is indexed from spindle to spindle, the tool in use is locked into accurate alignment with the main machine spindle. Simultaneously, the work is rapidly and accurately positioned by means of a Brown & Sharpe work-positioning table.

The result of this technique is an increase in production up to 5 times as compared with conventional multiple or gang-type drill presses.

MODEL A 6 spindles • $\frac{1}{2}$ " drilling and tapping capacity in steel • preselective spindle speeds, 200-4000 rpm, infinitely variable, on each spindle • preselective electrical tapping and depth controls on each spindle • table work surface 22"x24"



's newest division...

es that are saving up to 80% in

- drilling
- tapping
- boring
- reaming

Brown & Sharpe Turret Drilling Machines were developed by Howe & Fant, Inc., now a division of Brown & Sharpe Mfg. Co.

A revolutionary concept in drilling and tapping equipment, these turret drilling machines have been proved over a period of many years in all types of drilling operations, with records of 2 to 5 times greater productivity than with conventional gang drill box-jig methods.

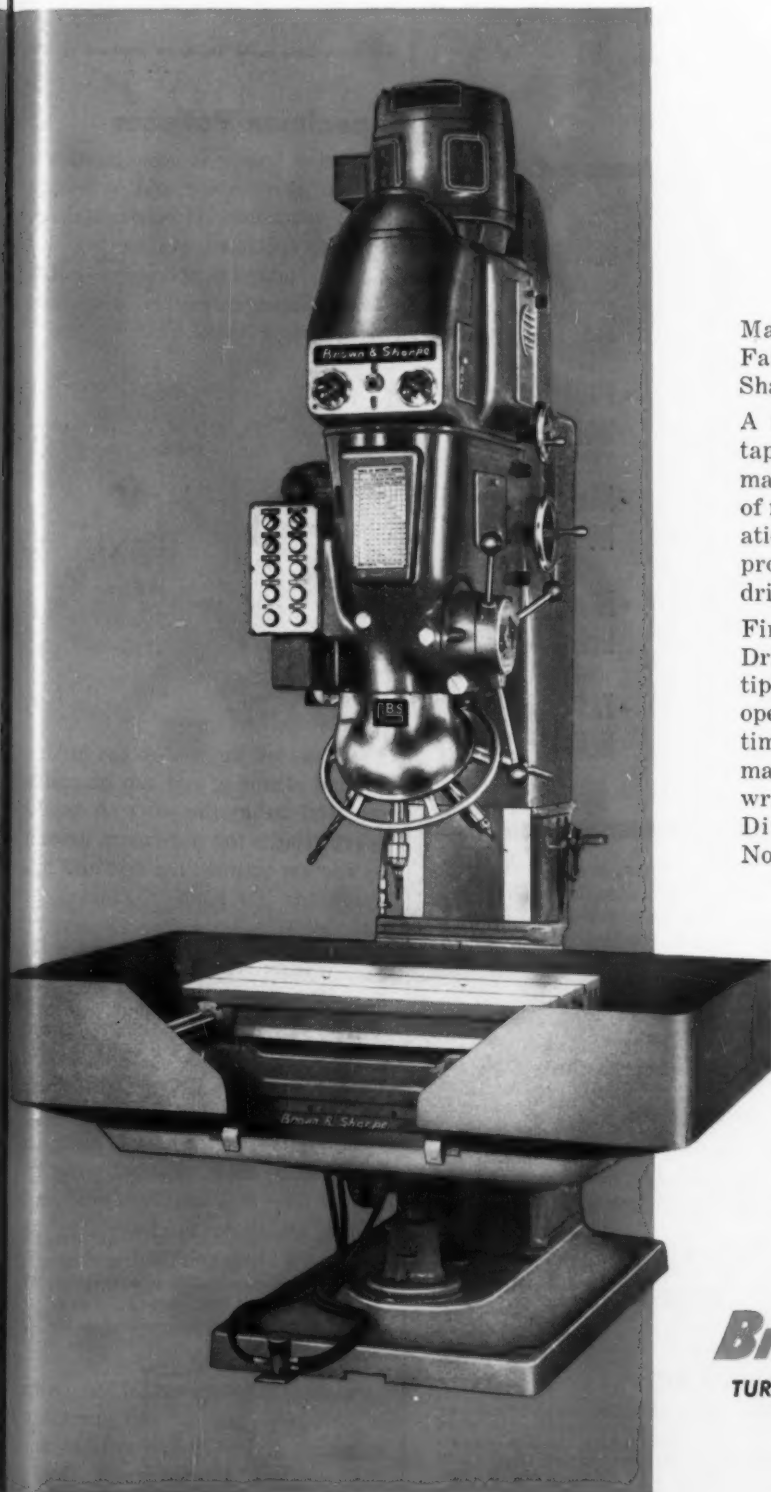
Find out how Brown & Sharpe Turret Drilling Machines can help you make multiple savings in your drilling and tapping operations — in handling time, set-up time, capital investment, floor space and maintenance. For complete information, write: Brown & Sharpe Turret Drilling Division, Inc., 20 Fitch Street, East Norwalk, Connecticut.

MODEL B 6 spindles • 1" capacity in steel

- preselective spindle speeds, 125-2000 rpm, infinitely variable on each spindle
 - preselective spindle feeds, .0025-.021" per revolution, infinitely variable on each spindle
 - preselective electrical tapping control and depth control on each spindle
 - preselective turret index, manual or power
 - table work surface 28" x 32".
- Machine functions may be combined with any standard numerical control (tape control) system for fully integrated automatic machining and work positioning.

Brown & Sharpe

TURRET DRILLING DIVISION, INC.



FOR CRITICAL AREAS IN FURNACE LININGS:

New, Porter Pitco-80... the only 80% Alumina plastic refractory on the market



- DENSIFIED
DEAIRED
SLABS
- PROPER
WORKABILITY
- NEEDS
NO FORMS
- FAST
INSTALLATION
- FASTER
HEAT-UP

Porter Pitco-80 is bagged in polyethylene material for maximum moisture retention and longest storage life.

- WITHSTANDS TEMPERATURES TO 3,200°F.

Now you can use a plastic refractory, with all the advantages of plastic, plus monolithic construction where you need an 80 per cent alumina refractory. New Porter PITCO-80 is recommended to: a) balance refractory linings in high temperature furnace installations . . . and b) for linings when iron oxides and molten aluminum are prime causes of failure. PITCO-80 alumina plastic is ideal for installation in:

Aluminum reverberatory furnaces
Crucible furnace linings
Around electrodes in electric furnace roofs
Burner blocks
Desulfurizing forehearth and holding ladles
Boiler target walls

For complete information write: Refractories Division,
H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.



H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

NEW EQUIPMENT

feed of stock into the saw, and trunnion table-tilting from 45° right to 15° left. A variety of optional equipment is available for special operations. (Powermatic Machine Co.)

For more data circle No. 48 on postcard, p. 127

Specimen Polisher

A new holder is announced for use in pregrinding and polishing metal specimens. It accommodates up to six specimens at once; and, by means of adapters, specimens of different diameters can be processed at the same time. The specimens



processed are inserted in the holder without clamping and can be easily removed during the work. A liquid brake retards the movement caused by friction between the disc and the specimens. (William J. Hacker & Co., Inc.)

For more data circle No. 49 on postcard, p. 127

Safety Signs

"HARD HAT AREA" signs for instant identification of hazardous areas and as a constant reminder to wear hard hats are available in many stock sizes. Self-adhering to any surface, they stand out bold and bright. (Westline Products Div. of Western Lithograph Co.)

For more data circle No. 50 on postcard, p. 127

Wire Wheels

A line is announced of wire wheels for bench and portable grinders, and wire cup brushes for disc sanders. Each wire is firmly

Greater Corrosion Resistance

Longer Fatigue Life

Less Product Incrustation



new tests prove

CONTOUR-WELDED* STAINLESS TUBING provides all three!

A recent series of tests prove TRENTWELD® tubing, made by the exclusive *Contour-Weld* process, is smoother than any other full-finished tubing. And still other tests show this extra smoothness ensures longer fatigue life, greater resistance to corrosion and less product incrustation.

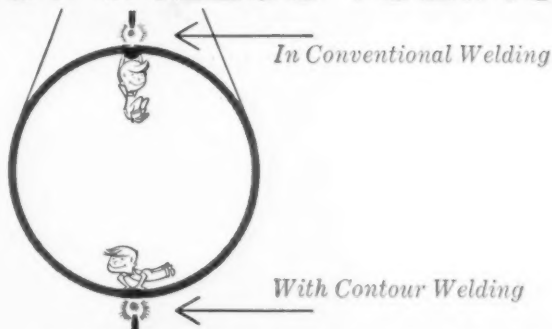
But here's why *Contour-welded* tubing is smoother inside:

First, it's smoother than seamless because it's formed from uniformly rolled strip steel whereas seamless must be extruded.

And second, it's smoother than other welded tubing because the Trent-patented *Contour-Weld* process virtually eliminates the weld bead.

But why not get full details on *Contour welded* tubing's superiority? Send for the free 48-page "Trent Weld Manual." It's chock-full of details on *Contour-welded* tubing in sizes from $\frac{1}{8}$ " to 40" — in stainless and high alloy steels, titanium, zirconium, zircaloy and Hastelloy†. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In CONVENTIONAL WELDING of tubes, gravity pulls molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

*With CONTOUR WELDING the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.



stainless and high alloy pipe and tubing
TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisc. • MILLS: East Troy, Wisc.; Fullerton, Calif.

THE IRON AGE, June 18, 1959

139

*First Precision Component
in the Run... or Last*

Acme-Gridleys
Sustain Exacting
Tolerances for
IBM's
"New Look"



An eight unit
battery of
 $\frac{3}{16}$ " RA-6
Acme-Gridleys.



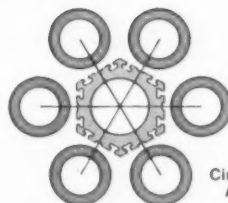


Close-up of rear side of tooling zone showing slotting attachment in the 5th position.

At IBM's modern Lexington, Kentucky plant, twenty Acme-Gridley $\frac{1}{16}$ " six spindle automatics are mass-producing the small to miniature parts for their sleek new electric typewriter. They help to provide IBM with greater *sustained* accuracy at lower cost than other comparable machines.

The precision components are held to closely controlled tolerances of .0005 t.i.r. These limits apply to the last piece in the run as well as the first, and consistent accuracy is maintained with less machine adjustment than ever before realized. Sustaining the closely controlled tolerances of these parts completely minimizes costly rejections during exhaustive quality control checks of the completed units. Inspection time is greatly reduced.

IBM has also found that the wide-open tooling zone of their $\frac{1}{16}$ " Acme-Gridleys permits much greater latitude in tooling up for complicated operations performed in a single set-up. This, plus the lasting accuracy of direct camming and the flexibility of independently operated toolslides, makes this newest member of the Acme-Gridley family a profitable asset to IBM's modern production line. Write for Bulletin MRA-58.



Pioneer in
Circumferential
Automation

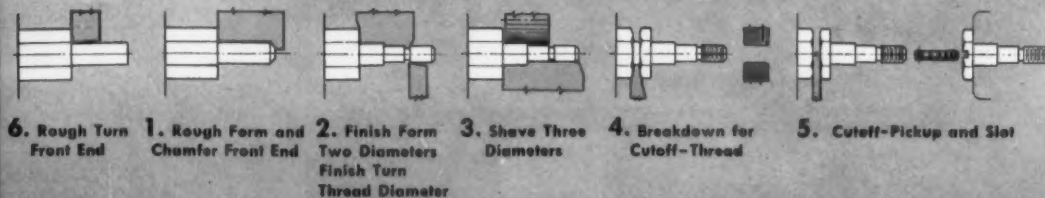
National Acme

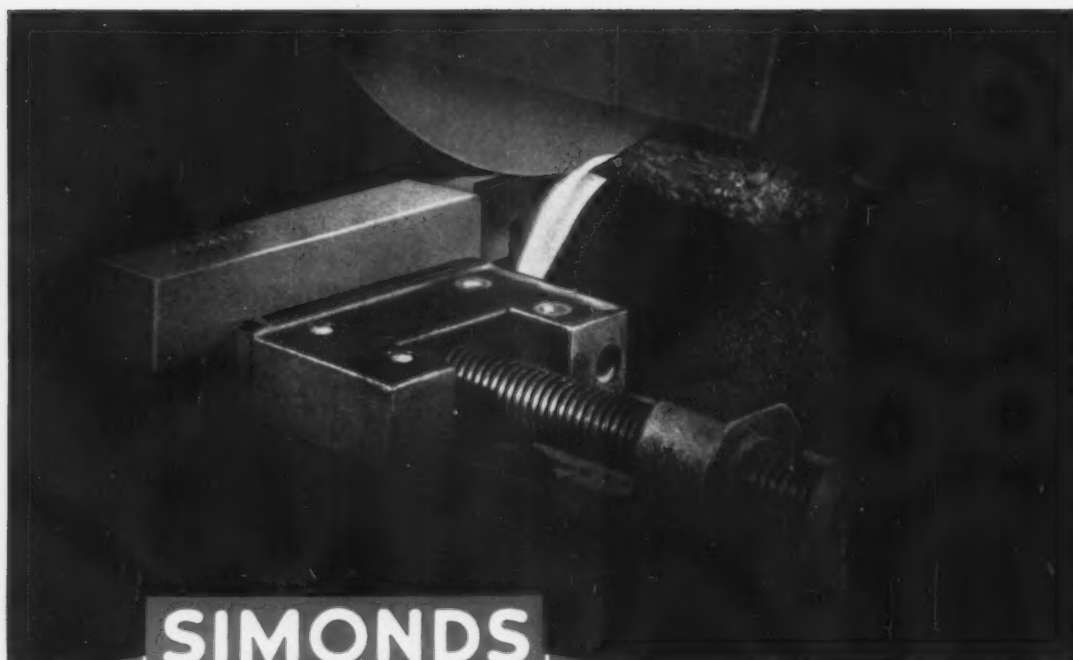
The National
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175 E. 131st Street
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9 Operations in 4.9 Seconds





SIMONDS
ABRASIVE CO.

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Precision made for best grinding performance . . . a product of the most modern manufacturing using latest techniques and most accurate equipment and tools, including air gauges. Highest mechanical accuracy, closest tolerances and balance for best running truth. Three-stage curing process assures closest duplication. Exact and true concentrations.

Man-made or natural diamonds in resinoid and vitrified bonds — metal bond in natural diamonds. Up to 35% improved grinding ratios regularly obtained with man-made diamonds on many applications.

Send for new, complete 48-page catalog with consumer net prices for all sizes, shapes, concentrations and diamond depths, form ESA 290.

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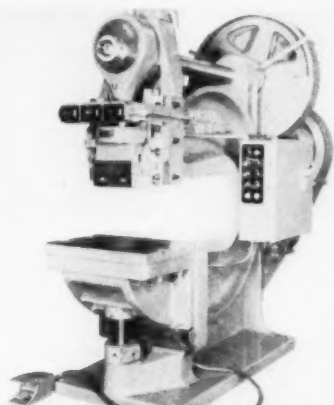
NEW EQUIPMENT

locked to eliminate loose flying wires. The cup brushes have a $\frac{5}{8}$ x 11-in. thread arbor. The wire wheel brushes are furnished with popular-size arbor adapters. (Skil Corp.)

For more data circle No. 51 on postcard, p. 127

Deep-Throat Press

With capacities of 15, 25 and 35 tons for light and medium punching, cutting and flanging on large pieces, a new series of presses features a heavy-section C-type frame. The high alloy cast iron frame forms



a deep throat to allow punching to the center of a 60-in. circle. Two extra-long removable gibs guide the slide. Standard slides have removable slide punch caps and cross-bar knockouts. Single gearing is available to provide slower operating speeds. Cast iron main gears with H-section spokes and steel pinions are standard. (The Minster Machine Co.)

For more data circle No. 52 on postcard, p. 127

Metal-Melting Line

A new type of metal-melting line is announced, particularly designed to continuously melt and deliver a constant, uniform flow of oxide-free copper at a constant temperature. The metal is pure and highly conductive, as no alloying materials come into contact with the metal. The refractory is entirely inert. (Lindberg Engineering Co.)

For more data circle No. 53 on postcard, p. 127

CASH IN YOUR CHIPS

Change Metal Turnings Waste
into More Profitable Shoveling CHIPS



No progressive, profit-conscious company—who produces 10 or more tons of metal turnings per month—can afford to ignore the profit potential of a modern chip salvage system . . . with an American Metal Turnings Crusher at the core.

American installation profits include: \$4 more per ton for chips than for machine turnings; up to 50 gallons per ton in cutting oil recovery; 75% less storage; easier, faster handling.

How many profit dollars are you losing under present operations? If, for example, you're currently producing 20 tons of turnings a month . . .

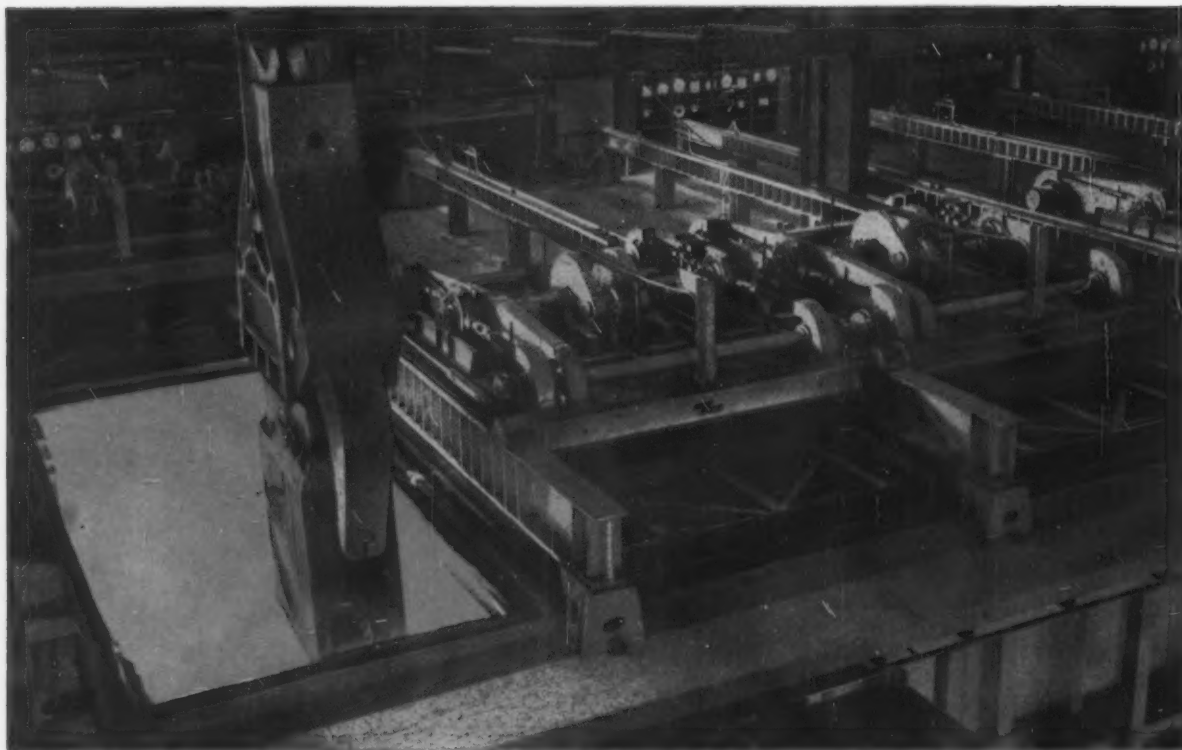
THIS COULD BE YOUR PROFIT STORY FOR NEXT YEAR!

240 Tons Metal Turnings per Year	\$ 960.00
(20 tons/month at \$4 extra per ton)	
6,000 Gallons Recovered Cutting Oil at 30¢/Gal.	\$1,800.00
(50 gals. per ton x 240 tons = 12,000 gals.)	
Half of this, 6,000 gals., can be credited to use of chips instead of turnings in reclamation)	
Estimated Savings in Manpower, Storage, Tools, Maintenance, Freight, etc.	\$ 300.00
TOTAL GROSS PROFIT	\$3,060.00



WRITE for Metal Turnings Crusher Bulletin.

1439 MACKLIND AVE. • ST. LOUIS 10, MO.



At Lukens Steel, massive ingots are heated for rolling in Salem-Brosius pit-type ingot heating furnaces.

When Lukens Steel expanded it specified Salem Soaking Pits

At Lukens Steel Company of Coatesville, Pa., famed maker of carbon and alloy steel plate and plate products, Salem-Brosius recently completed 12 of the largest soaking-pit furnaces ever designed and constructed. The pits are of the 2-burner, single-end top-fired type, fitted with needle-type metallic recuperators and capable of placing 200 tons of steel under cover per pit.

When asked for an opinion of the soaking-pits, one Lukens operating official said, "If we didn't think that Salem-Brosius pits were best for our purposes, we wouldn't have ordered them. After all, our expansion program calls for the most up-to-date and efficient equipment we can obtain."

Reports like this are not unusual . . . not only concerning soaking-pits, but all other Salem-Brosius heating and heat-treating furnaces. Salem-Brosius engineers are well known for their ability to design furnaces for maximum high-quality output at minimum operating cost. If your plans call for replacing old furnaces or adding new facilities, why not ask us to bid? There will be no obligation.



New Salem-Brosius auto-floor-type charging machine making alloy additions to the electric furnace at Lukens. Salem-Brosius' heavy mechanical equipment matches the quality of its furnaces.



SALEM-BROSIUS, INC.

PITTSBURGH, PENNSYLVANIA

Salem Engineering Limited, Toronto, Ontario • Salem Engineering Co., Ltd., London & Milford, England • Salem-Brosius, S.A., Luxembourg • Salem-Brosius, S.A., Paris, France • Alloy Manufacturing Corp., Pittsburgh, Pennsylvania • R. H. Freitag Manufacturing Div., Akron, Ohio • General Ionics Corp., Pittsburgh, Pennsylvania.



Roads, Rails and Vapor Trails

Whether it hugs the earth or rides the stratosphere's jet streams, **modern** transportation has one **uncommon** denominator—stainless steel.

America's first **supersonic** bomber—the world's **lightest** full-size, railroad passenger car—the trucking industry's **highest capacity** lightweight trailer—all owe their existence to stainless steel's extraordinary strength-weight ratio and almost indestructible good looks.

Every American auto on the road today uses stainless steel functionally and decoratively to protect painted and treated surfaces, because only stainless steel requires no protective treatment to preserve factory freshness and assure lasting customer satisfaction. **And** its unusual workability means that finished product costs are usually lower than for any other bright metal.

Whether your primary interest is function or form, J&L provides **consistent** quality for uniform production.

J&L leads the industry in melt shop standards for stainless steel—the point where quality starts, and **production economies** begin.



Plants and Service Centers:

Los Angeles • Kenilworth (N. J.) • Youngstown • Louisville (Ohio) • Indianapolis • Detroit



STAINLESS

SHEET • STRIP • BAR • WIRE

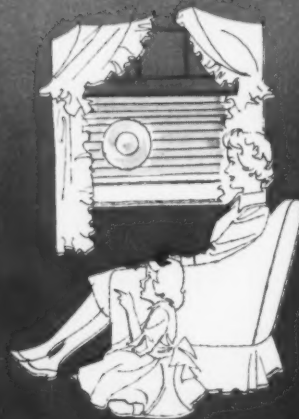
Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34

QUALITY

It's in our steel



so it's in your products



Close control from mine through mill builds quality into Alan Wood cold rolled steel. Your Alan Wood Representative can explain the advantages of this built-in **QUALITY**. His complete information on cold rolled steel and its applications, and his advice on type,

gauge and also to order can help you eliminate production problems...and costs...increase profits.

Call your Alan Wood Representative today! He's always available...and ready to help.

ALAN WOOD STEEL COMPANY

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The Iron Age Summary

Mills Face Third Quarter Test

Steel producers are accepting third quarter orders with some misgivings.

If there is no strike, they'll be up against one set of problems; if there is another, they'll have other worries.

■ Steel users are pushing the mills for a place on third quarter delivery schedules. Apparently they feel they have nothing to lose and everything to gain—strike or no strike.

But this poses problems for the mills. They are accepting these orders, but with some misgivings. They realize a percentage of this business will be canceled out if there is no strike. At the same time they don't want to commit too much tonnage because of the production and delivery problems that usually develop if there is a strike.

A Riddle—The amount of hedge buying for third quarter delivery is hard to gage. One sheet mill feels customers will take tonnage booked

for July and August shipment if there is no strike, but will cut back on new orders for September. Some major users have placed cold-rolled sheet orders as far ahead as October.

Meanwhile, complaints from steel users trying to get delivery before the June 30 strike deadline have dropped off. They realize it's now too late for the mills to change anything. Some hopes for a peaceful settlement of the labor dispute also are part of the picture.

Who's Gripping Most—The ones doing the most griping are companies which are using incoming steel as fast as they get it. This is centered in smaller production-type operations like forgers, stampers, and fastener makers.

Big customers are running into some knotty problems trying to get small tonnages of special products for experimental runs and similar operations. Special items are not available from warehouses, and in many cases are hard to convert from something in stock.

Import Problem Grows—Imports are a growing worry for the mills. One estimate is that April intake was 400,000 tons, or nearly 30 pct more than the record of 290,000 tons set in March. Prices of imports are reported rising.

Import agents are offering July and August delivery on bars, bar-size shapes, angles, and similar products being shipped into Cleveland.

A Close Watch—The mills are keeping a close watch on these imports. They fear this is only the beginning of an all-out assault by foreign producers on the lush U. S. market. Some of their best customers are turning to importers in the current critical period, and the chances are that many of them will stick with the foreign mills once the crisis is past—at least for a percentage of their requirements.

This foreign competition is one of the main reasons why U. S. mills are trying to avoid increased labor costs that would force them to raise their prices.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,632	2,604	2,646	1,751
Ingot Index				
(1947-1949=100)	163.8	162.1	164.7	109.0
Operating Rates				
Chicago	95.0	94.0	93.0	73.0
Pittsburgh	96.5	95.0*	95.0	60.5
Philadelphia	99.0	98.5	94.0	71.0
Valley	85.0	76.0*	86.5	48.0
West	93.5	93.5*	95.5	79.0
Cleveland	95.0	89.0*	93.0	49.0
Detroit	96.0	98.0*	99.0	66.5
Buffalo	105.0	107.0	107.0	54.0
South Ohio River	94.0	94.0*	96.0	64.0
South	92.0	97.0	96.0	66.0
Upper Ohio River	91.0	84.5*	93.0	73.0
St. Louis	77.0	80.0*	90.0	86.0
Aggregate	93.0	92.0	93.5	64.9

*Revised

Prices At a Glance

	This Week	Week Ago	Month Ago	Year Ago
(Cents per lb unless otherwise noted)				
Composite price				
Finished Steel base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	\$66.41	\$66.41	\$66.41	\$66.49
Scrap No. 1 hvy				
(Gross ton)	\$38.17	\$37.50	\$34.17	\$35.17
No. 2 bundles	\$25.33	\$25.17	\$23.50	\$25.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.10
Copper, electrolytic	31.50	31.50	31.50	26.50
Lead, St. Louis	11.80	11.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	104.00	104.00	103.50	94.50
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

Pump Market Starts to Tighten

The pump industry was as hard hit by the recession as most other industries.

But it is a trifle slower snapping back. There are advantages in buying now.

■ Pump makers are beginning to see daylight.

For the past 18 months or so, competition between them has been severe. Pump prices, still somewhat soft, are starting to firm as new bookings in the industry show a general 10 to 20 pct increase over last year.

Climb Should Continue — A heartening omen to the pump makers is the fact that the increases in bookings are almost entirely in small, standard equipment items. This is regarded as a sign that a strong upturn in pump buying is

coming during the second half of the year.

When the small standard pump business improves significantly, a boom in heavy equipment orders can be expected to follow in approximately six months.

Delivery Varies — Most major pump manufacturers at present are operating at less than capacity. So delivery on standard items should not be much of a problem. However, some producers have cut their finished product inventories to the bone. For this reason, a buyer might experience as much as a 4 to 8 weeks delay for standard pumps. Other producers keep their standard stock items on an off-the-shelf status. They offer delivery in 24 hours.

But if you're not worried about delivery, you probably are interested in price.

Look for Increases—As in other industries, pump makers are apprehensive of rising labor costs within their own plants. The wage-price spiral is as real in the pump industry as it is anywhere else. And if there is a hike in steel prices this summer, it will show up to some degree in pump prices.

For the purchasing agent who has call for pumps, the inflation inducement should be enough reason to prod him into buying now—before the pump market tightens up further. Another inducement: The situation in the market is not yet so strong that there isn't discounting going on.

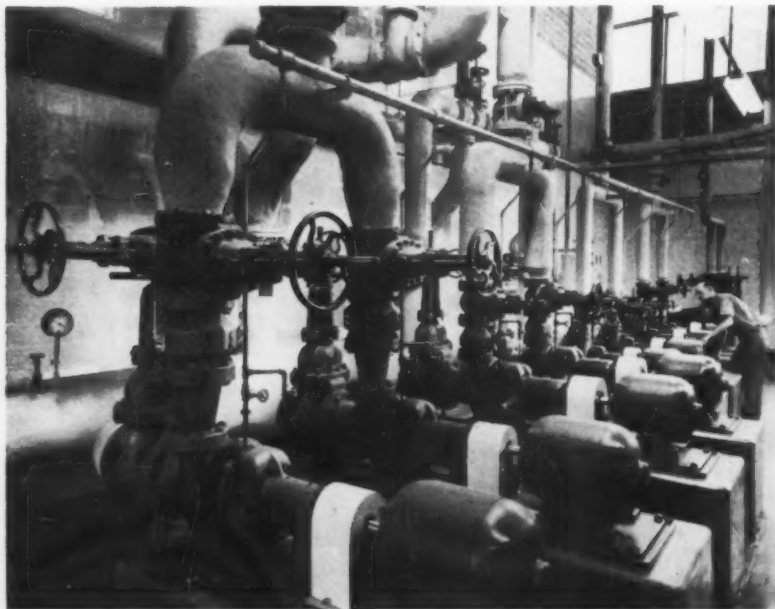
Real and Psychological—But discounting practice in the pump industry is generally ethical. When they are so inclined, manufacturers offer fair and legitimate discount privileges to quantity buyers. In some cases, however, discounts come under the "psychological" category.

The manufacturer in these instances merely adds the discount to what it believes the fair market price should be, and then uses the total as its list price. Of course, the buyer who is lured by one of these discounts does get his money's worth, although he may not be getting the bargain he believes.

New Products Plentiful — There are many interesting new pump designs on the market.

Allis-Chalmers has come out with a hermetically sealed pump, the Electri-Cand, designed specifically for hot water heating applications.

Worthington Corp. reports that a new horizontal power pump is its fastest growing line. The company finds the trend is toward horizontal pumps and away from vertical designs.



PUMPS AT WORK: Ten Worthington pumps provide chilled water to the Worthington air conditioning system at National Carbon Co.'s new, multi-million dollar research laboratory at Parma, O.

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Production Letdown Reflects Mill Strain

Despite their best efforts, the mills have not lived up to production estimates.

This is mighty sad reading for steel users fighting to get delivery before the probable steel strike deadline.

■ The strain is beginning to tell. Try as they might, the mills have not been able to maintain the production rate they have been aiming for.

For example: Last week, the forecast was for an operating rate of nearly 95 pct of capacity. This week, the mills reported an actual operating rate of 92 pct of capacity.

Why the letdown? Several things:

1. It's usually true that the higher your operating rate the harder it is to boost it. The closer you come to capacity, the less your chances of eking out another percentage point.

2. The atmosphere in the mills these days is one of tenseness. With a probable strike deadline looming less than two weeks from now, the workers are concerned and preoccupied. Some of them are resentful over the deadlock that has developed in the negotiations for a new contract.

3. Some mills, at least, have no intention of going into a strike with a heavy inventory of semi-finished steel. So they're inclined to cut down some on raw steel output on the basis of anticipated finished steel production between now and June 30.

As Deadline Nears—With the contract deadline so close, it's doubtful now that the mills will be

able to do any better from a production standpoint. A week from now, they'll have to start thinking about an orderly shutdown in case a strike comes.

All this makes mighty poor reading for the steel user hoping to get delivery on a critical tonnage before the month ends. But it's a fact.

Sheet and Strip—July sheet tonnage is sold out at some mills and there is strong demand for August production. Mills are screening August orders carefully, trying to avoid overbooking if there is a strike but at the same time trying to line up business that will stand up if there is no stoppage. Customer pressure for June delivery is reaching a boiling point.

Pipe and Tubing—Linepipe orders have come in strong for July and August, leaving little open space on mill books for these months. Oil producers and pipe distributors are holding off orders after building up stocks of oil country seamless. If there is no strike mills will rebuild their own stocks in July and business will go back on a day-to-day basis.

PURCHASING AGENT'S CHECKLIST

There is still hope for peace in the steel labor picture. P. 55

Ratio of sales to stocks is improving. P. 63

Metalworking has sharply increased appropriations for new plant and equipment. P. 65

Republic Steel's Brooklyn, N.Y. Steel & Tubes Div. plant has added Electrunite boiler tubes to its list of products. The plant will turn out electric resistance welded carbon steel boiler tube 4 in. O.D. and smaller and 0.148 in. minimum wall thickness and lighter. Price will be the current schedule for Cleveland mill plus \$4 ton and will effect a saving to customers in the east. Closest similar production is from western Pennsylvania. The Brooklyn plant now turns out mechanical and heat exchanger tubes.

Plates and Structural—In the Pittsburgh district, plate mills hope to come within one week of meeting June commitments. July plate schedules are pretty well filled although a small amount of tonnage is available at the end of the month. On wide flange beams, mills have committed about 80 pct of their July tonnage. On standard structurals, about 65 pct. August bookings of heavy steel are about half the July amount.

Algoma Steel Corp. Ltd., Sault Ste. Marie, Ont., plans to build a \$15 million wide-flange beam mill. D. S. Holbrook, president, stated. This will be the first mill in Canada to produce wide-flange beams up to a maximum size of 24 by 12 inches and to a maximum weight of 190 lb per foot. The largest structural shape presently rolled at Algoma is an 18 by 6 inch "I" beam weighing 54.7 lb per foot.

Bars—Bars mills say they will be in good shape on deliveries at the end of June. One mill expects the carryover into July will be 10 days or less. Makers of cold finished bars say most customers are "pretty well satisfied." The July picture on cold finished bars will depend to a large extent on hot rolled carryovers.

Canada—Dominion Steel & Coal Corp., Sydney, N.S., plans to spend \$12 million on plant expansion, including a new blooming mill installation.

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COMPARISON OF PRICES

(Effective June 16, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.
Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	June 16 1959	June 9 1959	May 19 1959	June 17 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$10.65	\$10.65	\$10.65	\$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	\$5.75	\$5.75	\$5.75	\$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Re-rolling billets	\$80.00	\$80.00	\$80.00	\$77.50
Slabs, re-rolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloys blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Pig Iron: (per gross ton)

	June 16 1959	June 9 1959	May 19 1959	June 17 1958
Foundry, del'd Phila.	\$70.57	\$70.57	\$70.57	\$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb.	12.25	12.25	12.25	12.25

Pig Iron Composite: (per gross ton)

Pig iron	\$66.41	\$66.41	\$66.41	\$66.49
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Scrap: (per gross ton)

No. 1 steel, Pittsburgh	\$42.50	\$42.50	\$37.50	\$37.50
No. 1 steel, Phila. area	37.50	35.50	33.50	33.50
No. 1 steel, Chicago	34.50	34.50	31.50	34.50
No. 1 bundles, Detroit	35.50	35.50	31.50	31.50
Low phos., Youngstown	42.50	41.50	38.50	37.50
No. 1 mach'y cast, Pittsburgh	49.50	49.50	49.50	48.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	47.50
No. 1 mach'y cast, Chicago	58.50	57.50	54.50	46.50

Steel Scrap Composite: (per gross ton)

No. 1 hvy. melting scrap	\$38.17	\$37.50	\$34.17	\$35.17
No. 2 bundles	25.33	25.17	23.50	25.83

Coke, Connellsville: (per net ton at oven)

Furnace coke, prompt	\$14.50-15.50	\$14.50-15.50	\$14.50-15.50	\$15.38
Foundry coke, prompt	18.50	18.50	18.50	17.50-19

Nonferrous Metals: (cents per pound to large buyers)

Copper, electrolytic, Conn.	31.50	31.50	31.50	26.50
Copper, Lake, Conn.	31.50	31.50	31.50	26.50
Tin, Straits, N. Y.	104.00¢	104.00	103.50	94.50
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.80	11.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. * Revised.

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Scrap Prices Show Burst of Strength

Several weeks of sustained activity has drained prime material from the market.

Dealers have their sights set on the period beyond the current steel labor situation.

■ The scrap market is showing a final burst of strength before the June 20 cutoff date set by many mills.

Last-minute purchases by consumers were possible only at higher prices. Even though steel labor negotiations are deadlocked and prospects for new orders in the next several weeks are dim, dealer resistance to mill orders was high.

The undertone of strength is apparent in all districts. And in some districts it is more than an undertone. In Philadelphia and Cleveland, for example, openhearth scrap sold for as much as \$2 higher than last week. In Birmingham, higher grades were bringing from \$2.50 to \$6 over quoted prices.

Reason for the scrap market strength in the face of a possible steel strike can be ascribed to reduced dealer inventories, expectation of strong demand for scrap once the labor picture clears, and a high rate of export activity.

The supply of prime grade scrap is low. The expected lull ahead will give the scrap market a chance to replenish its supply.

Based on the \$2 increase in Philadelphia, The IRON AGE No. 1 heavy melting Composite Price climbed 67¢ to \$38.17.

Pittsburgh—Price of most grades are unchanged as time is running out for shipments to mills. There is

still a strong feeling among brokers and dealers despite the prospect of a lull in orders and shipments for the next few weeks. Yards are more interested in acquiring scrap than selling it. Brokers have paid the full price or better on old orders—they have turned down mill offers for No. 1 openhearth grades at better than \$40. The supply of scrap is low and brokers see a period of strong demand after a steel labor contract is signed.

Chicago—Electric furnace, cast, and some railroad grades advanced \$1 to \$2 in a strong market. Broker buying prices for steelmaking grades remain firm but the consumer buying price held despite the unusually wide differential between Chicago and Eastern markets. First letters confirming cutoff date on bills of lading as of June 20 have been issued by some mills.

Philadelphia—Limited tonnages of No. 1 heavy melting and No. 2 heavy melting were sold locally at \$2 higher than last week's prices. The increases are substantiated by export buying. No. 1 heavy melting is bringing \$36 at the pier, which is equivalent to \$38 on the domestic market. Export had been draining material from the district and prospects are for more shiploading this month. No. 2 bundles, No. 1 busheling, and heavy turnings are up \$1.

New York—This market is quiet, with brokers cleaning up shipments against the mills' June 20 shutoff date. Export orders continue to account for most of the activity.

Detroit—Uncertainty over the outcome of steel labor negotiations

has dealers and brokers guessing. The trade is fence-sitting through the usual mid-month doldrums as they wait for new industrial lists to set the pace.

Cleveland—Market is up \$2 as brokers are paying through the nose for dealer scrap to avoid holdovers during a strike period. One mill has ordered long-term tonnage at \$41 for No. 1 grades and \$27 for No. 2 bundles with provisions for carry-over through a strike. Prime dealer scrap is scarce although secondary grades are plentiful. Foundry market has caught fire, too, with one consumer paying \$4 springboard to accumulate 2-ft foundry steel.

St. Louis—Scrap prices were unchanged here last week. Mills are buying some material at quoted prices, but movement of scrap is rather slow.

Birmingham—There is underlying strength in the market. Some special deals are reported at much higher prices due to scarcity of good scrap and dealer unwillingness to sell. Included are No. 1 heavy melting, up \$2.50, No. 1 dealer bundles and No. 1 busheling up \$6.

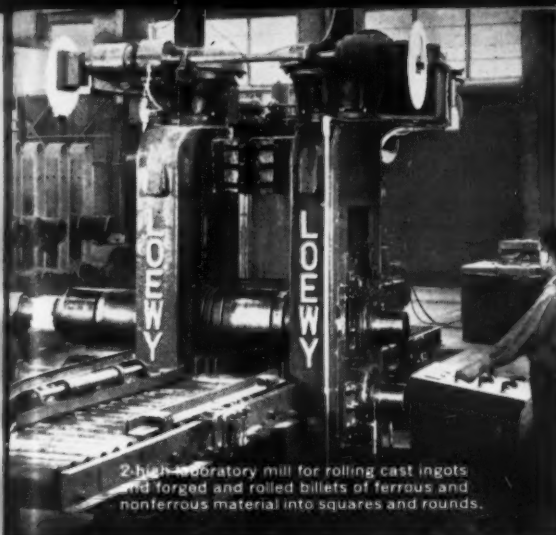
Cincinnati—Brokers are paying over their selling price to get dealers to part with scrap. Market is up \$1, reflecting the increase. Mills want to lay in scrap at present prices but are not reaching for it.

Buffalo—Prices are holding firm, with no sales reported. Dealers are still shipping on last order which had a June 20 deadline.

Boston—There's not much going on, but the market has a better tone this week.

West Coast—Exports to Japan are the main factor holding up prices. Mills are marking time, awaiting the outcome of labor contract negotiations.

Houston—The market continues quiet with a good deal of marking time while awaiting developments in the steel labor situation. Scrap intake is shrinking because of decreasing supply.



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SCRAP PRICES (Effective June 16, 1959)

Pittsburgh

No. 1 hvy. melting	\$42.00 to \$43.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	28.00 to 29.00
No. 1 busheling	42.00 to 43.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	46.00 to 47.00
Heavy turnings	33.00 to 34.00
No. 1 RR hvy. melting	43.00 to 44.00
Scrap rails, random lgth.	51.00 to 52.00
Rails 2 ft and under	56.00 to 57.00
RR specialties	50.00 to 51.00
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 factory bundles	41.00 to 42.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	34.00 to 35.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. forge crops	49.00 to 50.00
Low phos. punch'gs plate	
1 1/2 in. and heavier	46.00 to 47.00
Low phos. 2 ft and under	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	49.00 to 50.00
Rerolling rails	59.00 to 60.00
Rails 2 ft and under	54.00 to 55.00
Angles and splice bars	50.00 to 51.00
RR steel car axles	65.00 to 66.00
RR couplers and knuckles	48.00 to 49.00
No. 1 machinery cast.	58.00 to 59.00
Cupola cast.	51.00 to 52.00
Cast iron wheels	43.00 to 44.00
Malleable	59.00 to 60.00
Stove plate	49.00 to 50.00
Steel car wheels	48.00 to 49.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	22.00 to 24.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	24.00 to 25.00
Low phos. 5 ft and under	39.00 to 40.00
Low phos. 2 ft punch'gs	41.00 to 42.00
Elec. furnace bundles	38.00 to 39.00
Heavy turnings	33.00 to 34.00
RR specialties	43.00 to 44.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	41.00 to 42.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$33.50 to \$34.50
No. 2 hvy. melting	28.50 to 29.50
No. 1 dealer bundles	33.50 to 34.50
No. 2 bundles	23.00 to 24.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	43.00 to 44.00
Rails, random length	47.00 to 48.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	41.00 to 42.00
Drop broken cast.	51.00 to 52.00

Youngstown

No. 1 hvy. melting	\$40.50 to \$41.50
No. 2 hvy. melting	28.50 to 29.50
No. 1 dealer bundles	40.50 to 41.50
No. 2 bundles	27.50 to 28.50
Machine shop turn.	19.50 to 20.50
Shoveling turnings	24.50 to 25.50
Low phos. plate	42.00 to 43.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	37.00 to 38.00
No. 1 factory bundles	43.00 to 44.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Cut structural & plates, 2 ft and under	43.00 to 44.00
Drop forge flashings	37.00 to 38.00
Low phos. punch'gs plate	38.00 to 39.00
Foundry steel, 2 ft and under	39.00 to 40.00
No. 1 RR hvy. melting	42.00 to 43.00
Rails 2 ft and under	55.00 to 56.00
Rails 18 in. and under	56.00 to 57.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	53.00 to 54.00
No. 1 machinery cast.	51.00 to 52.00
Stove plate	48.00 to 49.00
Malleable	66.00 to 67.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	18.00 to 19.00
No. 1 RR hvy. melting	38.00 to 39.00
Rails, random lengths	44.00 to 45.00
Rails 18 in. and under	50.00 to 51.00
Angles and splice bars	44.00 to 45.00
RR specialties	43.00 to 44.00
Cupola cast.	50.00 to 51.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	54.00 to 55.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	\$32.50 to \$33.50
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	36.00 to 37.00
Elec. furnace, 3 ft and under	34.00 to 35.00
Bar crops and plate	42.00 to 43.00
Structural and plate, 2 ft.	41.00 to 42.00
No. 1 RR hvy. melting	34.00 to 35.00
Scrap rails, random lgth.	40.00 to 41.00
Rails, 18 in. and under	48.00 to 49.00
Angles and splice bars	43.00 to 44.00
Rerolling rails	54.00 to 55.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Cast iron car wheels	40.00 to 41.00
Unstripped motor blocks	40.00 to 41.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 dealer bundles	17.00 to 18.00
Machine shop turnings	9.00 to 10.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Clean chem. cast. borings	18.00 to 20.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	19.50 to 20.50
No. 1 busheling	33.00 to 34.00
Drop forge flashings	32.00 to 33.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	14.00 to 15.00
Heavy breakable cast.	34.00 to 35.00
Mixed cupola cast.	43.00 to 44.00
Automotive cast.	50.00 to 51.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	100.00 to 105.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$27.00 to \$28.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	27.00 to 28.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	27.00 to 28.00
Machine shop turn.	8.50 to 9.50
Shoveling turnings	11.50 to 12.50
Clean cast. chem. borings	12.00 to 13.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	31.00 to 32.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	\$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
Machine shop turn.	17.00
Cast iron borings	17.00
No. 1 cupola cast.	47.00

Los Angeles

No. 1 hvy. melting	\$38.00
No. 2 hvy. melting	36.00
No. 1 dealer bundles	35.00
No. 2 bundles	18.00
Machine shop turn.	\$16.00 to 17.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Elec. furn. 1 ft and under (foundry)	49.00
No. 1 cupola cast.	45.00

Seattle

No. 1 hvy. melting	\$35.00
No. 2 hvy. melting	33.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont

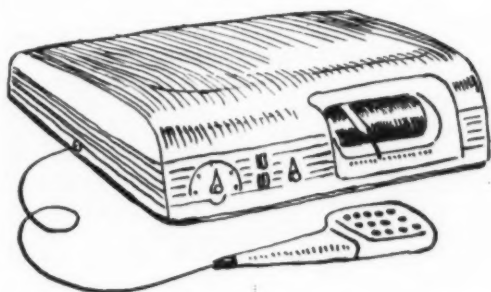
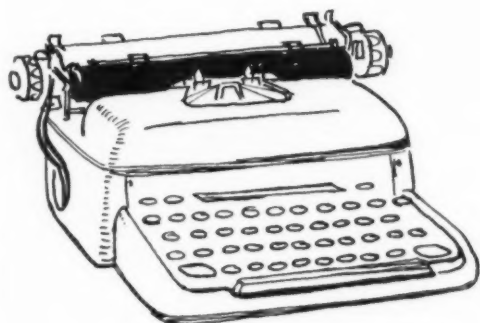
Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$32.25
No. 2 hvy. melting	28.25
No. 1 dealer bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Bush., new fact., prep'd	32.25
Bush., new fact., unprep'd	26.25
Machine shop turn.	14.00
Short steel turn.	17.00
Mixed bor. and turn.	13.00
Rails, rerolling	37.00
Cast scrap	\$46.50 to 48.00

Houston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$34.00
No. 2 hvy. melting	31.00
No. 2 bundles	20.00
Machine shop turn.	16.00
Shoveling turnings	20.00
Cut structural plate 2 ft and under	\$45.00 to 46.00
Unstripped motor blocks	37.00 to 38.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	28.00 to 29.00



ancestor of the business machine



Twenty-six centuries ago the Chinese used the abacus for adding and subtracting . . . Ancient Sumarians and Babylonians recorded many of their business transactions on clay tablets . . . The United States saw the development of the first commercial typewriter in 1873. The "Graphophone" dictating machine, first introduced in 1887, was an indirect descendant of a shorthand method of 5000 signs devised by Cicero's secretary.

Today's business machines are the veins and arteries of industry and commerce. Whether manual, mechanical, or electronic, their efficient operation and lasting service are dependent upon steel construction. And an uninterrupted output of steel is maintained only by a continuous flow of scrap to the mills.

*For the purchase or sale of iron
or steel scrap . . . phone or
write "Your Chicago Broker"*



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News From Germany Good and Bad

German metal traders want to import more primary metal.

But more of their semi-finished and fabricated metal is heading for the U. S.

■ A lot of things said at this year's meeting of the West German Metal Merchants Assn., as reported by the British Metal Bulletin are of interest to U. S. metals men. But it depends what part of the industry you're in as to whether the news is good or bad.

Good news for nonferrous metals producers: The Germans will apparently throw their weight behind minimum duties on primary non-ferrous metals coming into the European Economic Community.

EEC, known sometimes as Little Europe, or just the Community, is Italy, France, W. Germany, Belgium, Netherlands, and Luxembourg grouped as a single entity for trade purposes.

The chairman of the German association Wilhelm Kroll said, about EEC metals tariffs, "France and Italy have quite high tariffs and are trying to anchor them where possible in the general tariff. This viewpoint which runs counter to trading interests we shall combat by all possible means, and we know our government will give us support."

German Government Position—Dr. Vath of the W. German Ministry of Economics apparently indicated the government's position as he pointed out Germany's depen-

dence on imported metal. Here's his picture of the growth of German metal imports:

	1952	1958
aluminum	3,000	60,000
copper	54,000	353,000
lead	5,000	46,600
zinc	18,200	75,900
tin	6,500	10,400
nickel	6,000	11,000

(metric tons)

On the other side of the fence the news is not so good. It looks like more German mill and fabricated products are headed this way.

Must Export—The W. German government economist noted "the capacity of German semis and castings works are substantially in excess of demand." He said that in 1958, 15 pct of German nonferrous semi-finished products were exported. And there isn't much doubt where much of this is headed. "Exports to America have in recent years increased to a very encouraging extent."

What's ahead? "She (Europe) must import raw materials and export semi-finished and finished goods if the dense populations of Central Europe are to live," insists Dr. Vath.

On the possibility of a giant economic community made up of all or most of Free Europe, August-Martin Euler, General Director, Euratom Supply Agency, the atomic energy arm of Little Europe, said, "We are all convinced that the six

countries (EEC) are not an ideal number, but represent only a model on which to work."

Magnesium

Some magnesium people are saying to automakers, "If you would use more magnesium the price would go down."

And automakers are saying, "If you would push the price down we would likely use more magnesium."

This running conversation has been in progress for some time. But now some observers see a glimmer of hope.

Volume is the key to the magnesium price. If it could be increased, the trade believes the price could be brought down.

One source points out that magnesium is competing with aluminum in many markets highly regarded for growth possibilities. Now, he says, on price and performance it's a toss-up. A price move by either could tip the scales.

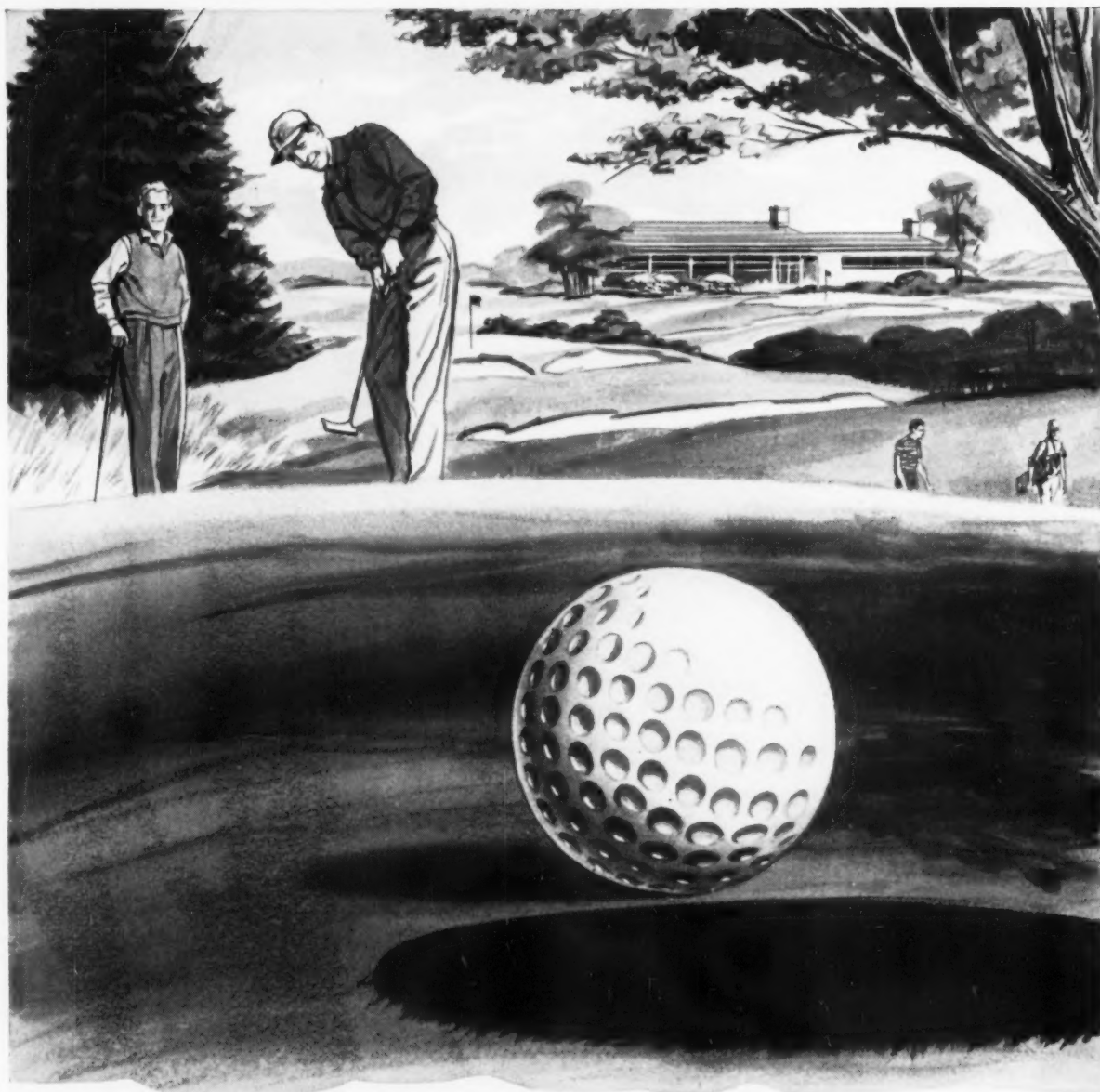
Tin prices for the week: June 10—104.00; June 11—104.00; June 12—104.00; June 15—104.00; June 16—104.75.*

*Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum Ingot	26.80	26.10	8/1/58
Copper (E)	31.50	30.00	3/9/59
Copper (CS)	31.50	32.00	6/15/59
Copper (L)	31.50	30.00	3/9/59
Lead, St. L.	11.80	11.30	5/7/59
Lead, N. Y.	12.00	11.50	5/7/59
Magnesium Ingot	36.00	34.80	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	162-182	185-205	11/3/58
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% Ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colborne, Canada. **ZINC:** prime western. **TIN:** See above; Other primary prices, pg. 186.



PAR is just another habit!

When you keep your eye on the ball — and keep playing the game for all you're worth, day after day — you're pretty sure to be a better-than-average performer.

That's the way it goes in the brass mill business, too. And here at Bristol we are able to score consistently enough — both in production and service — so that quite a few of the country's top users of sheet, rod and wire have taken us on as their partner. We'll be glad to team up with *you*, any time you say.

The **BRISTOL BRASS CORPORATION**

*Since 1850, makers of Brass strip, rod and wire in Bristol, Connecticut
Bristol Brass has offices and warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton,
Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse*

AND FOR BRASS FORGINGS, TOO . . . ACCURATE BRASS CORP. (SUBSIDIARY OF THE BRISTOL BRASS CORP.), BRISTOL, CONNECTICUT.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	3/4	3/4-1/2	3/4-1	1 1/4-1 1/2
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type→	Gage→	.250	.250- 2.00	.188	.081	.032
AZ31B Stand. Grade		67.9	69.0	77.9	103.1	
AZ31B Spec.		93.3	95.7	108.7	171.3	
Tread Plate		70.6	71.7			
Tooling Plate		73.0				

Extruded Shapes

Factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel Monel	Inconel
Sheet, CR	126	106
Strip, CR	124	108
Hot bar, HR	107	89
Angles, HR	107	89
Plates, HR	120	105
Seamless tube	157	129
Shot, blocks	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	55.63	.....	52.86	55.82
Brass, Yellow	48.24	48.75	48.18	51.05
Brass, Low	51.23	51.77	51.17	54.54
Brass, R L	52.29	52.83	52.23	55.60
Brass, Naval	52.80	.....	49.61	56.21
Muntz Metal	50.85	.....	46.16	.....
Comm. Br.	53.90	54.44	53.84	56.06
Mang. Br.	56.54	.....	50.14	.....
Phos. Br. 5%	75.34	.....	75.84	.....

Free Cutting Brass Rod..... 32.73

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$7.25-\$8.50; alloy, \$13.40-\$17.00, Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00. Wire, rolled and/or drawn, commercially pure, \$5.75-\$6.25; alloy, \$7.75-\$10.00; Bar, HR or forged, commercially pure, \$4.25-\$5.00; alloy, \$4.25-\$7.50; billets, HR, commercially pure, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex., 29.50
Beryllium Aluminum 5% Be, Dollar
per lb contained Be.....\$74.75
Beryllium copper, per lb cont'd Be, \$43.00
Beryllium 97% lump or beads,
f.o.b. Cleveland, Reading.....\$71.50
Bismuth, ton lots.....\$ 2.25
Cadmium, del'd.....\$ 1.30
Calcium, 99.9% small lots.....\$ 4.55
Chromium, 99.8% metallic basis.....\$ 1.31
Cobalt, 97-99% (per lb.).....\$1.75 to \$1.82
Germanium, per gm, f.o.b. Miami,
Okla., refined.....\$3.30 to \$2.00
Gold, U. S. Treas., per troy oz.....\$35.00
Indium, 99.9%, dollars per troy oz.....\$ 2.25
Iridium, dollars per troy oz.....\$75 to \$85
Lithium, 98%.....\$11.00 to \$14.00
Magnesium sticks, 100 to 500 lb..... 59.00
Mercury, dollars per 76-lb flask
f.o.b. New York.....\$240 to \$242
Nickel oxide sinter at Buffalo, N. Y.,
or other U. S. points of entry,
contained nickel..... 69.60
Palladium, dollars per troy oz.....\$18 to \$20
Platinum, dollars per troy oz.....\$77 to \$80
Rhodium.....\$120.00 to \$125.00
Silver ingots (¢ per troy oz.).....91.375
Thorium, per kg.....\$43.00
Vanadium.....\$ 3.45
Zirconium sponge.....\$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot..... 30.25
No. 115..... 29.00
No. 120..... 28.00
80-10-10 ingot..... 34.50
No. 305..... 32.50
88-10-2 ingot..... 43.50
No. 210..... 39.25
No. 215..... 35.00
No. 245..... 35.00
Yellow ingot..... 24.75
No. 405..... 27.75
Manganese bronze..... 27.75
No. 421..... 27.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys..... 24.75-25.00
0.30 copper max..... 24.50-24.75
0.60 copper max..... 24.25-25.25
Piston alloys (No. 122 type)..... 21.50-22.00
No. 12 alum. (No. 2 grade)..... 22.00-22.50
108 alloy..... 25.00-26.00
195 alloy..... 24.25-24.75
13 alloy (0.60 copper max.)..... 21.75-22.25
AXS-679 (1 pct zinc)..... 21.75-22.25

(Effective June 15, 1959)

Steel deoxidizing aluminum notch bar
granulated or shot

Grade 1—95-97 1/2%.....22.50-23.50
Grade 2—92-95%.....21.25-22.25
Grade 3—90-92%.....20.25-21.25
Grade 4—85-90%.....17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for ship-
ments of 20,000 lb and over)

	Heavy	Turnings
Copper.....	27 1/2	26 3/4
Yellow brass.....	20 1/2	18 3/4
Red brass.....	24 1/2	23 1/2
Comm. bronze.....	25 1/2	24 3/4
Mang. bronze.....	19 1/2	18 3/4
Free cutting rod ends.....	20 1/2	

Customs Smelters Scrap

(Cents per pound carload lots, delivered
to refinery)

No. 1 copper wire..... 26 1/2
No. 2 copper wire..... 25
Light copper..... 22 1/2
*Refinery brass..... 24 1/2
Copper bearing material..... 23 1/2
*Dry copper content

Ingot Makers Scrap

(Cents per pound carload lots, delivered
to refinery)

No. 1 copper wire..... 26 1/2
No. 2 copper wire..... 25
Light copper..... 22 1/2
No. 1 composition..... 21
No. 1 comp. turnings..... 20 1/2
Hvy. yellow brass solids..... 16
Brass pipe..... 16 1/2
Radiators..... 17

Aluminum

Mixed old cast..... 13 1/2—14 1/2
Mixed new clips..... 16—17
Mixed turnings, dry..... 14—15

Dealers' Scrap

(Dealers' buying price f.o.b. New York
in cents per pound)

Copper and Brass

No. 1 copper wire..... 24 1/2—25
No. 2 copper wire..... 22 1/2—23
Light copper..... 20 1/2—21
Auto radiators (unsweated)..... 14 1/2—14 3/4
No. 1 composition..... 18 1/2—19 1/2
No. 1 composition turnings..... 17 1/2—17 3/4
Cocks and faucets..... 14 1/2—15 1/2
Clean heavy yellow brass..... 13 1/2—13 3/4
Brass pipe..... 14 1/2—15 1/2
New soft brass clippings..... 15 1/2—16
No. 1 brass rod turnings..... 12 1/2—13 1/2

Aluminum

Alum. pistons and struts..... 7 — 7 1/2
Aluminum crankcase..... 10 1/2—11 1/2
1100 (2s) aluminum clippings..... 14 1/2—15
Old sheet and utensils..... 10 1/2—11 1/2
Borings and turnings..... 6 1/2—7
Industrial castings..... 10 1/2—11 1/2
2020 (24S) clippings..... 12 — 12 1/2

Zinc

New zinc clippings..... 4 1/2—5 1/2
Old zinc..... 3 1/2—3 3/4
Zinc routings..... 2 — 2 1/4
Old die cast scrap..... 1 1/2—2

Nickel and Monel

Pure nickel clippings..... 52-54
Clean nickel turnings..... 37-40
Nickel anodes..... 52-54
Nickel rod ends..... 52-54
New Monel clippings..... 30-32
Clean Monel turnings..... 30-32
Old sheet Monel..... 26-28
Nickel silver clippings, mixed..... 18
Nickel silver turnings, mixed..... 15

Lead

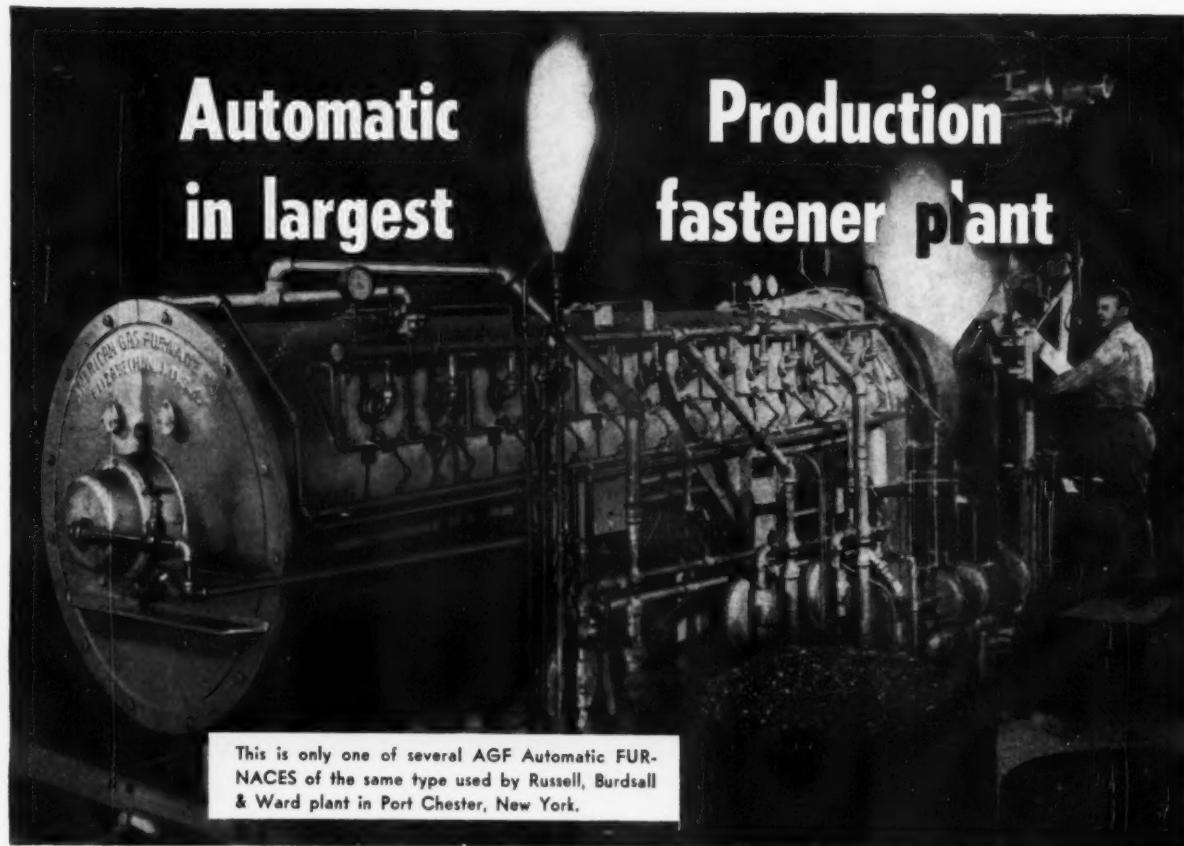
Soft scrap lead..... 7 — 7 1/2
Battery plates (dry)..... 2 — 2 1/4
Batteries, acid free..... 1 1/2—2 1/4

Miscellaneous

Block tin..... 77 — 78
No. 1 pewter..... 59 — 60
Auto babbitt..... 40 — 41
Mixer common babbitt..... 9 1/2—10
Solder joints..... 13 1/2—14 1/2
Siphon tops..... 9 1/2—10
Small foundry type..... 9 1/2—10
Monotype..... 8 1/2—9
Lino. and stereotype..... 7 — 7 1/2
Electrotype..... 5 1/2—5 3/4
Hand picked type shells..... 2 1/2—2 3/4
Lino. and stereo. dross..... 2 1/2—2 3/4
Electro dross..... 2 1/2—2 3/4

**Automatic
in largest**

**Production
fastener plant**



This is only one of several AGF Automatic FURNACES of the same type used by Russell, Burdall & Ward plant in Port Chester, New York.

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Gas Heat Treating Equipment since 1878"

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AMERICAN GAS FURNACE CO.

1004 Lafayette St., Elizabeth 4, N. J.

My Name

Company

Street

City

Please send Bulletin No. 139

Have Factory Rep. Call

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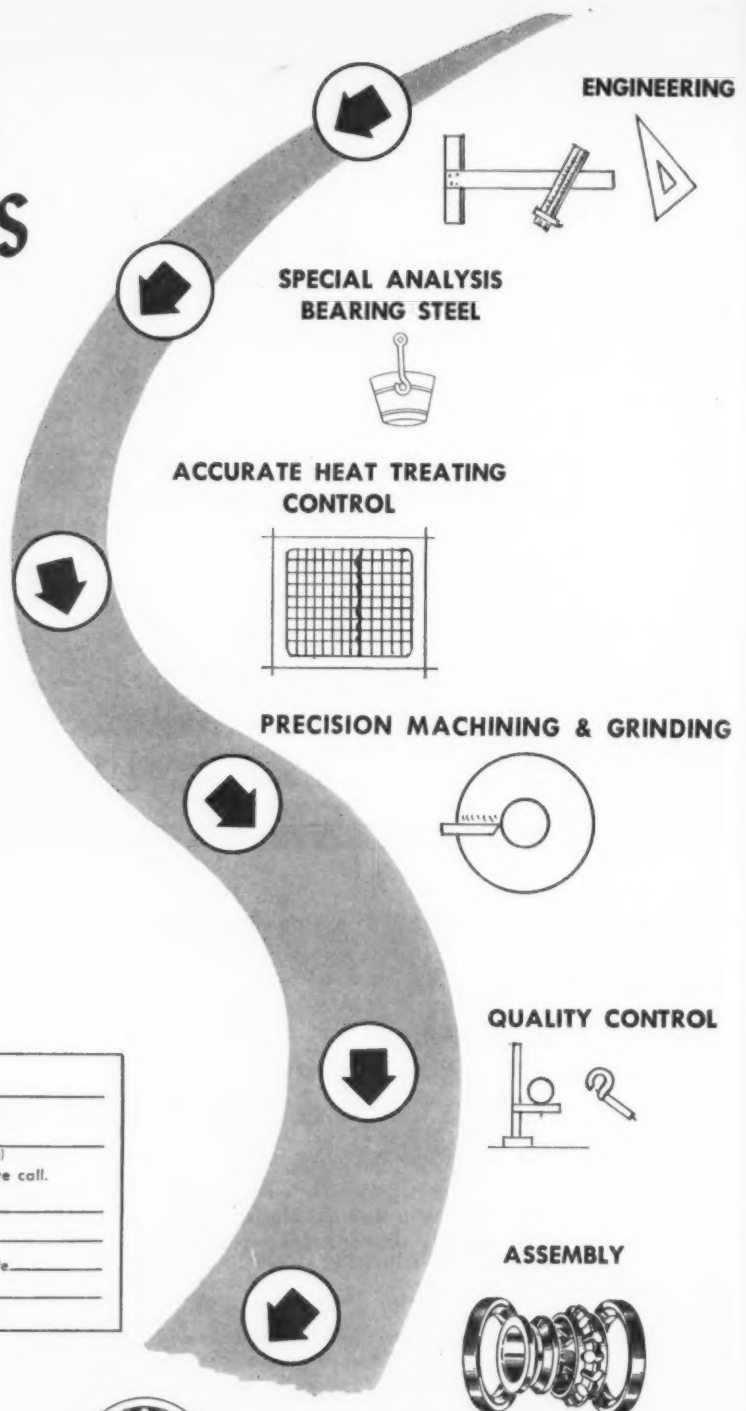


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EAST	IRON A
	ST
	PRI
	Bethle
	Buffal
	Phila.
	Harris
	Cons
	New
	John
MIDDLE WEST	Bosto
	New
	Baltim
	Phoe
	Sparr
	New
	Bridg
	Walli
	Pawt
	Worc
SOUTH	Alton
	Ashla
	Canto
	Dov
	Chica
	Frank
	Evans
	Cleve
	Detra
	Ande
WEST	Gary
	Indi
	Sterli
	India
	New
	Niles
	Shar
	Owe
	Pitt
	Midl
SOUTH	Aliqu
	McK
	Weir
	Folla
	You
	Font
	Gene
	Kan
	Los
	Ter
SOUTH	Min
	Port
	San
	Pitt
	Seat
	Atla
	Fair
	Bir
	Hou
	Tex

IRON AGE

STEEL
PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.		\$119.00 B3		5.55 B3	8.10 B3	5.55 B5						
	Buffalo, N. Y.	\$80.00 R3, B3	\$99.50 R3, B3	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	5.10 B3, R3	7.425 S10, R7	7.575 B3		
	Phila., Pa.								7.875 P15				
	Harrison, N. J.												15.55 C11
	Conschocken, Pa.		\$104.50 A2	\$126.00 A2				5.15 A2		7.575 A2			
	New Bedford, Mass.								7.875 R6				
	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.55 B3	8.10 B3						
	Boston, Mass.								7.975 T8				
	New Haven, Conn.								7.875 D1				
	Baltimore, Md.								7.425 T8				15.90 T8
	Phoenixville, Pa.				5.55 P2		5.55 P2						
	Sparrows Pt., Md.							5.10 B3		7.575 B3			
MIDDLE WEST	New Britain, Bridgeport, Wallingford, Conn.		\$119.00 N8						7.875 W1, S7				
	Pawtucket, R. I. Worcester, Mass.								7.975 N7, A5				15.90 N7 15.70 T8
	Alton, Ill.							5.30 L1					
	Ashland, Ky.							5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$118.00 R3, \$114.00 T5					7.425 G4		10.80 G4		
	Chicago, Franklin Park, Evanston, Ill.	\$80.00 U1, R3	\$99.50 U1, R3, W8	\$119.00 U1, R3, W8	6.50 U1	5.50 U1, W8, P13	8.05 U1, Y1, W8	5.50 U1	5.10 W8, N4, A1	7.525 A1, T8, M8	7.575 W8	8.40 W8, S9, I3	15.55 A1, S9, G4, T8
	Cleveland, Ohio								7.425 A5, J3		10.75 A5	8.40 J3	
	Detroit, Mich.			\$119.00 R5				5.10 G3, M2	7.425 M2, S1, D1, P11	7.575 G3	10.80 S1		
	Anderson, Ind.								7.425 G4				
	Gary, Ind. Harbor, Indiana	\$80.00 U1	\$99.50 U1	\$119.00 U1, Y1		5.50 U1, I3	8.05 U1, J3	5.50 I3	5.10 U1, I3, Y1	7.425 Y1	7.575 U1, I3, Y1	10.90 Y1	8.40 U1, Y1
	Sterling, Ill.	\$80.00 N4				5.50 N4	7.75 N4	5.50 N4	5.20 N4				
	Indianapolis, Ind.								7.575 R5				15.70 R5
WEST	Newport, Ky.							5.10 A9				8.40 A9	
	Niles, Warren, Ohio Sharon, Pa.		\$99.50 S1, C10	\$119.00 C10, S1				5.10 R3, S1	7.425 R3, T4, S1	7.575 R3, S1	10.80 R3, S1	8.40 S1	15.55 S1
	Owensboro, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G5									
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	\$80.00 U1, P6	\$99.50 U1, C11, P6	\$119.00 U1, C11, B7	6.50 U1	5.50 U1, J3	8.05 U1, J3	5.50 U1	5.10 P6	7.425 J3, B4 7.525 E3		8.40 S9	15.55 S9
	Weirton, Wheeling, Follansbee, W. Va.				6.50 U1, W3	5.50 W3		5.50 W3	5.10 W3	7.425 F3	7.575 W3	10.80 W3	
	Youngstown, Ohio	\$80.00 R3	\$99.50 Y1, C10	\$119.00 Y1			8.05 Y1		5.10 U	7.425 Y1, R5 Y1	7.575 U1, Y1	10.95 Y1	8.40 U1, Y1
	Fontana, Cal.	\$90.50 K1	\$109.00 K1	\$140.00 K1		6.30 K1	8.85 K1	6.45 K1	5.825 K1	9.20 K1			
	Geneva, Utah		\$99.50 C7			5.50 C7	8.05 C7						
	Kansas City, Mo.					5.60 S2	8.15 S2					8.65 S2	
	Los Angeles, Torrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2		5.85 C7, B2	9.30 C1, R5		9.60 B2	17.75 J3
	Minnequa, Colo.					5.80 C6			6.20 C6	9.375 C6			
	Portland, Ore.					6.75 O2							
SOUTH	San Francisco, Niles, Pittsburg, Cal.		\$109.00 B2			6.15 B2	8.70 B2		5.85 C7, B2				
	Seattle, Wash.		\$109.00 B2			6.25 B2	8.80 B2		6.10 B2				
	Atlanta, Ga.					5.70 A8			5.10 A8				
	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 T2	\$99.50 T2			5.50 T2 R3, C16	8.05 T2		5.10 T2, R3, C16	7.575 T2			
	Houston, Lone Star, Texas		\$104.50 S2	\$124.00 S2		5.60 S2	8.15 S2					8.65 S2	

(Effective June 15, 1959)

IRON AGE

STEEL
PRICES

Italics identify producers listed in key at end of table. Base prices f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL PRICES		SHEETS							WIRE ROD	TINPLATE†		Holloware Enameling 29 ga.
		Hot-rolled 18 ga. & hyvr.	Cold-rolled	Galvanized (Hot-dipped)	Enamel-ing	Long Tern	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.		Hi Str Low Alloy Galv.	Cokes* 1.25-lb. base box		Electro** 0.25-lb. base box
EAST	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coated mfg. terms deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct \$2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add \$1.00. Differential 1.00 lb./0.25 lb. add 65¢.	
	Claymont, Del.											
	Coatesville, Pa.											
	Conshohocken, Pa.	5.15 A2	6.325 A2				7.575 A2					
	Harrisburg, Pa.											
	Hartford, Conn.											
	Johnstown, Pa.								6.40 B3			
	Fairless, Pa.	5.15 U1	6.325 U1				7.575 U1	9.325 U1		\$10.50 U1	\$9.20 U1	
	New Haven, Conn.											
	Phoenixville, Pa.											
	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3
	Worcester, Mass.									6.70 A5		
Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 L1		
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7					
	Canton-Massillon, Dover, Ohio			6.875 R1, R3								
	Chicago, Joliet, Ill.	5.10 W8, A1					7.525 U1, W8			6.40 A5, R3, W8		
	Sterling, Ill.									6.50 N4, K2		
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3, J3		6.40 A5		
	Detroit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3				
	Newport, Ky.	5.10 A1	6.275 A1									
	Gary, Ind. Harbor, Indiana	5.10 U1, I3, Y1	6.275 U1, I3, Y1	6.875 U1, I3	6.775 U1, I3, Y1	7.225 U1	7.525 U1, Y1, I3	9.275 U1, Y1	6.40 Y1	\$10.40 U1, Y1	\$9.10 I3, U1, Y1	7.85 U1, Y1
	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2	6.875 G2						\$9.20 G2	7.95 G2
	Kokomo, Ind.			6.975 C9						6.50 C9		
	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2						
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7						
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 S1	7.225 S1*, R3	7.525 R3, S1	9.275 R3,			\$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 U1, J3, P6	6.275 U1, J3, P6	6.875 U1, J3 7.50 E3*	6.775 U1		7.525 U1, J3	9.275 U1, J3	10.025 U1, J3	6.40 A5, J3, P6	\$10.40 W5, J3	\$9.10 U1, J3 7.85 U1, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7							6.40 P7		
	Weirton, Wheeling, Follansbee, W. Va.	5.10 W3, W5	6.275 W3, F3, W5	6.875 W3, W5 7.50 W3*		7.225 W3, W5	7.525 W3	9.275 W3		\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5
Youngstown, Ohio	5.10 U1, Y1	6.275 Y1	7.50 J3*	6.775 Y1		7.525 Y1	9.275 Y1		6.40 Y1			
WEST	Fontana, Cal.	5.825 K1	7.40 K1				8.25 K1	10.40 K1			\$11.05 K1	\$9.75 K1
	Geneva, Utah	5.20 C7										
	Kansas City, Mo.									6.65 S2		
	Los Angeles, Torrance, Cal.									7.20 B2		
	Minnequa, Colo.									6.65 C6		
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	\$11.05 C7	\$9.75 C7
SOUTH	Atlanta, Ga.											
	Fairfield, Ala. Alabama City, Ala.	5.10 T2, R3	6.275 T2, R3	6.875 T2, R3	6.775 T2					6.40 T2, R3	\$10.50 T2	\$9.20 T2
	Houston, Texas									6.65 S2		

* Electrogalvanized sheets.

(Effective June 15, 1959)

*7.425 at Sharon-Niles in 7.225

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICES

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.			6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3			8.00 W6
	Claymont, Del.							5.30 C4	7.50 C4	7.95 C4	
	Coatesville, Pa.							5.30 L4	7.50 L4	7.95 L4	
	Conshohocken, Pa.							5.30 A2	6.375 A2	7.50 A2	7.95 A2
	Harriburg, Pa.							5.30 P2	6.375 P2		
	Milton, Pa.	5.825 M7	5.825 M7								
	Hartford, Conn.			8.15 R3		9.325 R3					
	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3
	Fairless, Pa.	5.825 U1	5.825 U1		6.875 U1						
	Newark, Camden, N. J.			8.10 W10, P10		9.20 W10, P10					
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W10 8.15 J3	6.80 N8	9.175 N8					
	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 B5, C14		9.325 A5,B5					8.30 A5, W6
	Spring City, Pa.			8.10 K4		9.20 K4					
MIDDLE WEST	Alton, Ill.	5.875 L1									8.20 L1
	Ashland, Newport, Ky.							5.30 A7, A9	7.50 A9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15* R3		7.65 R3, R2	6.725 R3 6.475 T5	9.025 R3, R2 8.775 T5		5.30 E2			
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.095 U1, R3, W8, N4, P13	5.675 U1, R3, N4, P13, W8 5.875 L1	7.65 A5, W10, W8, B5, L2, N9	6.725 U1, R3, W8	9.025 A5, W10, W8, L2, N8, B5	8.30 U1, W8, R3	5.30 U1, A1, W8, L3	6.375 U1	7.50 U1, W8	7.95 U1, W8
	Cleveland, Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5, C13, C18		9.025 A5, C13, C18	8.30 R3	5.30 R3, J3	6.375 J3		7.95 R3, J3
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8, B5 7.65 R5	6.725 R5, G3	9.025 R5 9.225 B5, P3, P8	8.30 G3	5.30 G3		7.50 G3	7.95 G3
	Duluth, Minn.										8.00 A5
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1, J3, Y1	5.675 U1, J3, Y1	7.65 R3, J3	6.725 U1, J3, Y1	9.025 R3, M4	8.30 U1, Y1	5.30 U1, J3, Y1	6.375 J3, I1	7.50 U1, Y1	7.95 U1, Y1, J3
	Granite City, Ill.							5.40 G2			
	Kokomo, Ind.		5.775 C9								8.10 C9
	Sterling, Ill.	5.775 N4	5.775 N4					5.30 N4			8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10	9.025 C10		5.30 R3, S1		7.50 S1	7.95 R3, S1
	Owensboro, Ky.	5.675 G5			6.725 G5						
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1, J3	5.675 U1, J3	7.65 A5, B4, R3, J3, C11, W10, S9, C8, M9	6.725 U1, J3, C11, B7	9.025 A5, W10, R3, S9, C11, C8, M9	8.30 U1, J3	5.30 U1, J3	6.375 U1, J3	7.50 U1, J3, B7	7.95 U1, J3, B7
	Portsmouth, Ohio										8.00 P7
	Weirton, Wheeling, Follansbee, W. Va.							5.30 W5			
	Youngstown, Ohio	5.675 U1, R3, Y1	5.675 U1, R3, Y1	7.65 A1, Y1, F2	6.725 U1, Y1	9.025 Y1, F2	8.30 U1, Y1	5.30 U1, R3, Y1		7.50 Y1	7.95 U1, Y1
WEST	Emeryville, Fontana, Cal.	6.425 J5 6.375 K1	6.425 J5 6.375 K1		7.775 K1		9.00 K1	6.10 K1		8.30 K1	8.75 K1
	Geneva, Utah							5.30 C7		7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2		8.55 S2				8.25 S2
	Los Angeles, Torrance, Cal.	6.375 C7, B2	6.375 C7, B2	9.10 R3, P14, S12	7.775 B2	11.00 P14, S12	8.625 B2				8.95 B2
	Minneapolis, Colo.	6.125 C6	6.125 C6					6.15 C6			8.25 C6
	Portland, Ore.	6.425 O2	6.425 O2								
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2				8.675 B2				8.95 C7, C6
	Seattle, Wash.	6.425 B2, N6, A10	6.425 B2, A10				8.675 B2	6.20 B2		8.40 B2	8.85 B2
	Atlanta, Ga.	5.875 A8	5.675 A8								8.00 A8
SOUTH	Fairfield City, Ala. Birmingham, Ala.	5.875 T2, R3, C16	5.875 T2, R3, C16	8.25 C16			8.30 T2	5.30 T2, R3		7.95 T2	8.00 T2, R3
	Houston, Ft. Worth, Lone Star, Texas	5.925 S2	5.925 S2		6.975 S2		8.55 S2	5.40 S2		7.60 S2	8.05 S2
											8.25 S2

† Merchant Quality—Special Quality 35¢ higher.

(Effective June 15, 1959)

* Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
- A2 Alan Wood Steel Co., Conshohocken, Pa.
- A3 Allegheny Ludlum Steel Corp., Pittsburgh
- A4 American Cladmetals Co., Carnegie, Pa.
- A5 American Steel & Wire Div., Cleveland
- A6 Angel Nail & Chaplet Co., Cleveland
- A7 Armco Steel Corp., Middletown, Ohio
- A8 Atlantic Steel Co., Atlanta, Ga.
- A9 Acme Newport Steel Co., Newport, Ky.
- A10 Alaska Steel Mills, Inc., Seattle, Wash.
- B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Pacific Coast Steel Corp., San Francisco
- B3 Bethlehem Steel Co., Bethlehem, Pa.
- B4 Blair Strip Steel Co., New Castle, Pa.
- B5 Bliss & Laughlin, Inc., Harvey, Ill.
- B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.
- B7 A. M. Byers, Pittsburgh
- B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
- C1 Calstrip Steel Corp., Los Angeles
- C2 Carpenter Steel Co., Reading, Pa.
- C3 Claymont Products Dept., Claymont, Del.
- C4 Colorado Fuel & Iron Corp., Denver
- C5 Columbia Geneva Steel Div., San Francisco
- C6 Columbia Steel & Shalting Co., Pittsburgh
- C7 Continental Steel Corp., Kokomo, Ind.
- C8 Copperweld Steel Co., Pittsburgh, Pa.
- C9 Crucible Steel Co. of America, Pittsburgh
- C10 Cuyahoga Steel & Wire Co., Cleveland
- C11 Compressed Steel Shalting Co., Readville, Mass.
- C12 G. O. Carlson, Inc., Thornhale, Pa.
- C13 Connors Steel Div., Birmingham
- C14 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- D1 Detroit Steel Corp., Detroit
- D2 Driver, Wilbur B. Co., Newark, N. J.
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, Ill.
- E1 Eastern Stainless Steel Corp., Baltimore
- E2 Empire Reeves Steel Corp., Mansfield, O.
- E3 Enamel Products & Plating Co., McKeesport, Pa.
- F1 Firth Sterling, Inc., McKeesport, Pa.
- F2 Fitzsimons Steel Corp., Youngstown
- F3 Follansbee Steel Corp., Follansbee, W. Va.

- G2 Granite City Steel Co., Granite City, Ill.
- G3 Great Lakes Steel Corp., Detroit
- G4 Greer Steel Co., Dover, O.
- G5 Green River Steel Corp., Owenboro, Ky.
- H1 Hanna Furnace Corp., Detroit
- I2 Ingersoll Steel Div., Chicago
- I3 Inland Steel Co., Chicago
- I4 Interlake Iron Corp., Cleveland
- J1 Jackson Iron & Steel Co., Jackson, O.
- J2 Jessop Steel Corp., Washington, Pa.
- J3 Jones & Laughlin Steel Corp., Pittsburgh
- J4 Joslyn Mfg. & Supply Co., Chicago
- J5 Judson Steel Corp., Emeryville, Calif.
- K1 Kaiser Steel Corp., Fontana, Calif.
- K2 Keystone Steel & Wire Co., Peoria
- K3 Koppers Co., Granite City, Ill.
- K4 Keystone Drawn Steel Co., Spring City, Pa.
- L1 Lackde Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- M1 Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mfg. Co., Sharon, Pa.
- M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
- M5 Mystic Iron Works, Everett, Mass.
- M6 Milton Steel Products Div., Milton, Pa.
- M7 Mill Strip Products Co., Evanston, Ill.
- M8 Moltrup Steel Products Co., Beaver Falls, Pa.
- N1 National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh
- N4 Northwestern Steel & Wire Co., Sterling, Ill.
- N6 Northwest Steel Rolling Mills, Seattle
- N7 Newman Crosby Steel Co., Pawtucket, R. I.
- N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
- N9 Nelson Steel & Wire Co.
- O1 Oliver Iron & Steel Co., Pittsburgh
- O2 Oregon Steel Mills, Portland
- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Steel Corp., Phoenixville, Pa.
- P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P5 Pittsburgh Screw & Bolt Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit
- P8 Plymouth Steel Co., Detroit

- P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- P11 Production Steel Strip Corp., Detroit
- P13 Phoenix Mfg. Co., Joliet, Ill.
- P14 Pacific Tube Co.
- P15 Philadelphia Steel and Wire Corp.
- R1 Reeves Steel & Mfg. Div., Dover, O.
- R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
- R3 Republic Steel Corp., Cleveland
- R4 Ruebling Sons Co., John A., Trenton, N. J.
- R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome, N. Y.
- S1 Sharon Steel Corp., Sharon, Pa.
- S2 Sheffield Steel Div., Kansas City
- S3 Shenango Furnace Co., Pittsburgh
- S4 Simonds Saw and Steel Co., Fitchburg, Mass.
- S5 Sweet's Steel Co., Williamsport, Pa.
- S7 Stanley Works, New Britain, Conn.
- S8 Superior Drawn Steel Co., Monaca, Pa.
- S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
- S10 Seneca Steel Service, Buffalo
- S11 Southern Electric Steel Co., Birmingham
- S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
- S13 Seymour Mfg. Co., Seymour, Conn.
- T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
- T2 Tennessee Coal & Iron Div., Fairfield
- T3 Tennessee Products & Chem. Corp., Nashville
- T4 Thomas Strip Div., Warren, O.
- T5 Timken Steel & Tube Div., Canton, O.
- T7 Texas Steel Co., Fort Worth
- T8 Thompson Wire Co., Boston
- U1 United States Steel Corp., Pittsburgh
- U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
- U3 Ulbrich Stainless Steels, Wallingford, Conn.
- U4 U. S. Pipe & Foundry Co., Birmingham
- W1 Wallingford Steel Co., Wallingford, Conn.
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa.
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo
- W7 Wilson Steel & Wire Co., Chicago
- W8 Wisconsin Steel Div., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh
- W12 Wallace Barnes Steel Div., Bristol, Conn.
- Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pt) f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD																SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.			
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																								
Sparrows Pt. B3	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50										
Youngstown R3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Fontana K1	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50										
Pittsburgh J3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
Alton, Ill. L1	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50										
Sharon M3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Fairless N2	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50										
Pittsburgh N1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
Wheeling W5	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Wheatland W4	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Youngstown Y1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
Indiana Harbor Y1	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50										
Lorain N2	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50										
Youngstown R3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50										
Fairless N2	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50										
Fontana K1	*6.25	*2.25			0.75		1.25		1.75		2.25		2.75											
Pittsburgh J3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		
Alton, Ill. L1	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50										
Sharon M3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50										
Pittsburgh N1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		
Wheeling W5	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50										
Wheatland W4	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50										
Youngstown Y1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		
Indiana Harbor Y1	5.75	*6.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	0.50										
Lorain N2	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		

Threads only, butt weld and seamless, 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 5 1/2 pt. higher discount. Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective June 15, 1959)

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	\$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	\$3.60 to \$3.95
Nickel	\$1.05 to \$1.93
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13c plus metal value
Stainless Steel, 302	\$1.07
Stainless Steel, 316	\$1.26
Steel, atomized, prealloyed, 4600 series	11.00 plus metal value
Tin	14c plus metal value
Titanium, 99.25+%, per lb., f.o.b.	\$11.25
Tungsten	\$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
$\frac{1}{2}$ " and smaller x 3" and shorter	55	57	61	62
$\frac{3}{4}$ " diam. x 3" and shorter	47	49½	54	55
$\frac{3}{4}$ " thru 1" diam x 6" and shorter	37	39½	45	46
$\frac{3}{4}$ " thru 1" diam, longer than 6" and 1½" and larger x all lengths	31	34	40	41
Roller thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
$\frac{3}{4}$ in. or smaller	62
$\frac{7}{8}$ in. to 1½ in. inclusive	56
1½ in. and larger	51½

C. P. Hex, reg. & hvy.	
$\frac{3}{4}$ in. or smaller	62
$\frac{7}{8}$ in. to 1½ in. inclusive	56
1½ in. and larger	51½

Hot Galv. Hex Nuts (All Types)	
$\frac{3}{4}$ in. and smaller	41

Semi-finished Hex Nuts	
$\frac{3}{4}$ in. or smaller	62
$\frac{7}{8}$ in. to 1½ in. inclusive	56
1½ in. and larger	51½
(Add 25 pct for broken case or keg quantities)	

Finished	
$\frac{7}{8}$ in. and smaller	65

Rivets	Base per 100 lb
$\frac{1}{2}$ in. and larger	\$12.85
7/16 in. and smaller	Pct. Off List 15

Cap Screws	Discount (Packages)
Full Finished H. C. Heat Treat	
New std. hex head, pack-aged	Full Case

$\frac{3}{4}$ " diam. and smaller x 6" and shorter	54	42
$\frac{3}{4}$ ", $\frac{7}{8}$ ", and 1" diam. x 6" and shorter	38	23
$\frac{3}{4}$ " diam. and smaller x longer than 6" and shorter	..	..
$\frac{3}{4}$ ", $\frac{7}{8}$ ", and 1" diam. x longer than 6" and shorter	..	..
$\frac{1}{4}$ " through $\frac{5}{8}$ " dia. x 6" and shorter	59	48
$\frac{3}{4}$ " through 1" dia. x 6" and shorter	45	32
Minimum quantity— $\frac{1}{4}$ " through $\frac{3}{8}$ " diam., 15,000 pieces; $\frac{7}{16}$ " through $\frac{5}{8}$ " diam., 5,000 pieces; $\frac{3}{4}$ " through 1" diam., 2,000 pieces.	..	..

Machine Screws & Stove Bolts

Plain Finish	Discount	Mach. Screws	Stove Bolts
Cartons	60	60	60
Bulk	Quantity		
To $\frac{1}{4}$ " diam. incl.	25,000-and over 60	..	..
$\frac{5}{16}$ to $\frac{1}{2}$ " diam. incl.	15,000-200,000 60	..	..

Machine Screws & Stove Bolt Nuts

In Cartons	Discount	Hex	Square
	16	19	19
In Bulk	Quantity		
$\frac{3}{4}$ " diam. & smaller	25,000-and over 15	16	16

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery & Charge	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
		Hot-Rolled (18 ga. & hr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled	Standard Structural	Hot-Rolled (merchant)	Cold- Finished	Hot-Rolled 4015 As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4015 As rolled	Cold-Drawn 4140 Annealed	
Atlanta		8.50	9.87	10.13	8.91	9.29	9.40	9.39	13.24*				
Baltimore	\$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston**	.10	10.22†	11.27‡	12.07§	12.17¶	10.42§	10.72¶	10.34†	13.45*	16.79	15.79	20.29	19.54
Buffalo	.15	8.55	9.75	11.00	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago**	.15	8.40	9.60	11.05	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati		8.58	9.66	11.10	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland**	.15	8.32†	9.61‡	11.15§	10.36¶	8.76§	9.63¶	9.36†	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit	.15	8.66	9.86	11.40	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70§	11.20- 11.80	12.20	9.15	9.10	9.00	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee	.15	8.54	9.74	11.19	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	9.27	10.59	11.40	9.74	9.87	9.84	10.09	13.35*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	.10	8.30	9.35	10.71	9.35	9.25	9.20	9.50	12.05*	16.58	15.58	20.08	19.33
Pittsburgh**	.15	8.32†	9.61‡	10.95§	10.36¶	8.52§	9.24¶	8.62†	11.40*	16.20	15.20	19.70	18.95
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20†	11.50	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60
Seattle		10.30	11.55	12.50	10.25	10.10	10.20	10.50	14.70	17.15	16.00	20.65	20.60
Spokane	.15	10.45	11.70	10.90	10.65	10.25	10.35	11.15	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.78	9.98	11.43	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	11.64	8.99	9.45	9.53	9.70	10.16		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** Prices based on 2000 lb item quantities except for galv. sheet, c-f and alloy bars.

† 10c zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. † 10 ga. x 36 x 96 —120; ‡ 20 ga. x 36 x 96 —120; § 10 ga. x 36 —120; ¶ ¼" x 1"; ** I-Beams 6 x 12.5; † Rounds—¼-2 15/16"; † 15 ga. & heavier; † 14 ga. & lighter.

(Effective June 15, 1959)

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, fct allowed in quantity)

Copper	
Roller elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	38.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	18.00
(for elliptical add 1c per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3c per lb)	
Cadmium	1.20
Tin, ball anodes \$1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drums	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6
Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.	

**AUTOMATICALLY
FEED ANY MACHINE
FROM THIS
SLACK LOOP**



**for greater
accuracy
and production!**

Koil Kradles form a slack loop between coil and machine from which any automatic feed can freely draw! The slack loop eliminates drag and resistance of pulling against heavy coils. Reduced drag improves accuracy of any feed device... records show up to 80% more footage handled per shift!

Koil Kradle's variable timer delays shut-off up to 10 seconds after motor switch trips off... forms a new slack loop before stopping, eliminates many unnecessary motor starts and stops! Adjustable plates center various coil widths; reversible motor for rewinding; power driven rolls; anti-friction bearings and numerous other features!

ASK FOR CIRCULARS, sizes and prices. Stock widths up to 50", coil weights to 20,000 lbs.



World's largest
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benchmaster

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**Work Longer,
Work Faster,
Wear Less!**

Hook onto any electric over-head crane... need no latches, hand lines, ropes or limit switches... can't discharge accidentally while being traversed... operates without need of circuit breakers... motor enclosed against dust, soot and weather... steel and bronze construction... can operate in pits or high-sided cars... plus many other cost-cutting design features!

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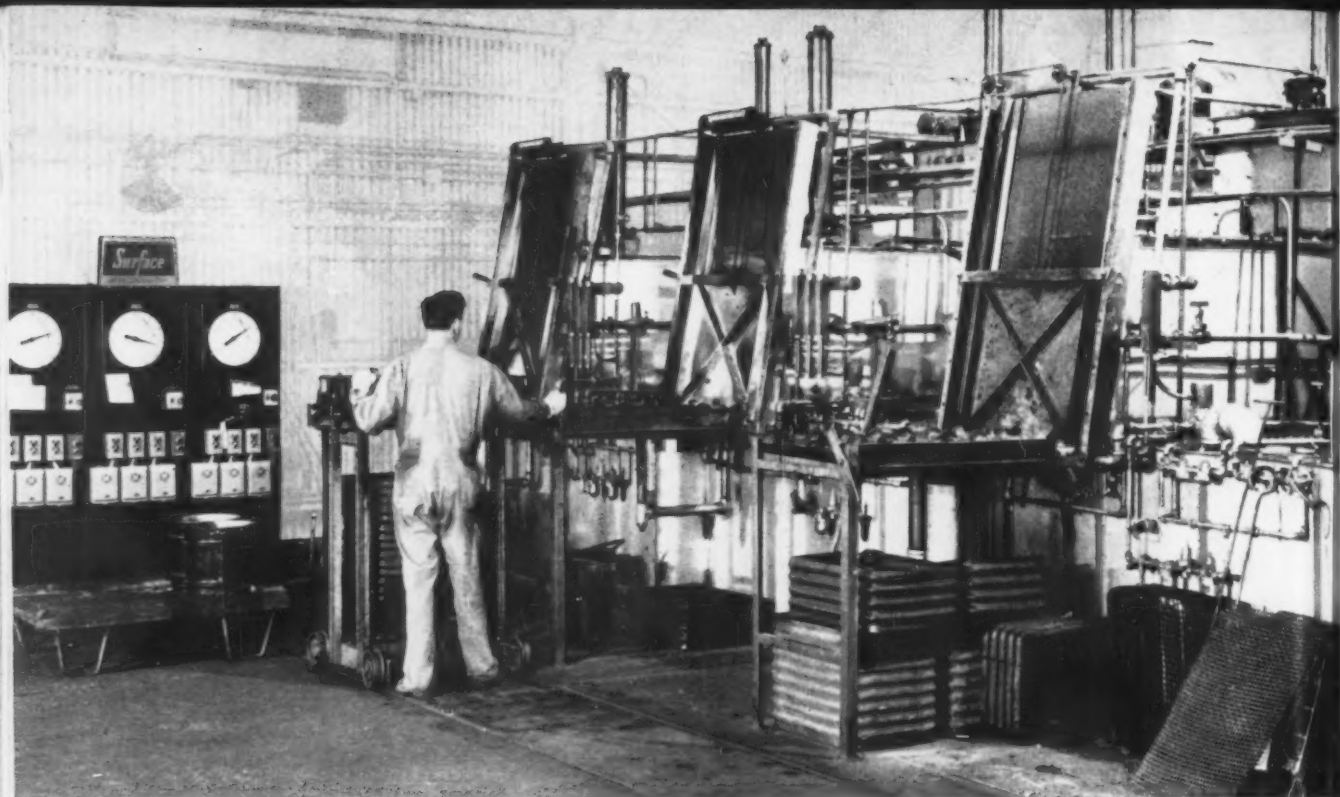
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Builders of Better Buckets Since 1888

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Light and heavy
machinery
for all classes
of sheet
metal plate
and structural
work...

8' X 14" SHEAR, 30" GAP.

10' X 1 1/4" SHEAR, 24" GAP.

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CAMBRIDGE CITY INDIANA



23,000 HOURS!

not one maintenance shutdown

That surprising record of a **Surface Allcase®** furnace was revealed during a recent survey of a large number of installations which had been operating over four years.

Other remarkable data on the average life of alloy steel parts in these furnaces:

Radiant tubes: 14,700 hours

Tube support brackets: 14,400 hours

Roller rails: 15,300 hours

Trays: 6,200 hours

Baskets: 7,800 hours

This record is convincing evidence that Surface quality keeps maintenance cost (frequently a major portion of operating expenses) to an absolute minimum. Write for Allcase Bulletin SC-174.

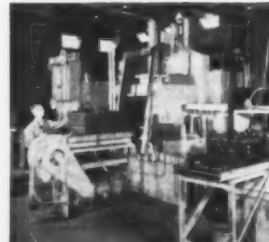
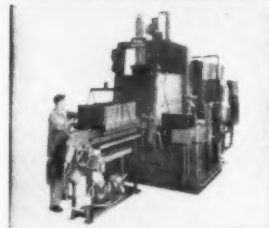


wherever heat is used in industry

SURFACE COMBUSTION CORPORATION

2373 Dorr St., Toledo 1, Ohio

In Toronto: Surface Industrial Furnaces, Ltd.



Illustrations shown are typical Allcase installations.

PIG IRON

Dollars per gross ton, f.o.b.,
subject to switching charges.

Producing Point	Basic	Fdry.	Mail.	Bess.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	
Birmingham R3	62.00	62.50*			
Birmingham W9	62.00	62.50*	66.50		
Birmingham U4	62.00	62.50*	66.50		
Buffalo R3	66.00	66.50	67.00	67.50	
Buffalo H1	66.00	66.50	67.00	67.50	
Buffalo W6	66.00	66.50	67.00	67.50	
Chastot P2	66.50	67.00	67.50		
Chicago I4	66.00	66.50	66.50	67.00	
Cleveland A5	66.00	66.50	66.50	67.00	71.00†
Cleveland R3	66.00	66.50	66.50	67.00	
Duluth I4	66.00	66.50	66.50	67.00	71.00†
Erie I4	66.00	66.50	66.50	67.00	71.00†
Everett M6	67.50	68.00	68.50		
Fontana K1	75.00	75.50			
Geneva, Utah C7	66.00	66.50			
Granite City G2	67.90	68.40	68.90		
Hubbard Y1			66.50		
Ironton, Utah C7	66.00	66.50			
Midland C11	66.00				
Minnequa C6	68.00	68.50	69.00		
Monessen P6	66.00				
Neville Is. P4	66.00	66.50	66.50	67.00	71.00†
N. Tonaunda T1	66.00	66.50	67.00	67.50	
Sharpsville S3	66.00	66.50	67.00		
So. Chicago R3	66.00	66.50	66.50	67.00	
So. Chicago W8	66.00	66.50	66.50	67.00	
Swedeland A2	68.00	68.50	69.00	69.50	
Toledo I4	66.00	66.50	66.50	67.00	
Troy, N. Y. R3	68.00	68.50	69.00	69.50	73.00
Youngstown Y1		66.50			

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), H1, \$79.25; Jackson J1, I4 (Globe Div.), \$78.00; Niagara Falls (15.01-15.50), \$101.00; Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under 10 pct phos.), \$54.80. Add \$1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingot, re-rolled	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, E1; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., J2; Detroit, M2; Louisville, O., R5.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Lechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Detroit, S1; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, R3; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (25¢ per lb. higher); Seymour, Conn., S13, (25¢ per lb. higher); New Bedford, Mass., R6; Gary, U1, (25¢ per lb. higher).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5, R3; Ft. Wayne, I4; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Conn., N8; Ambridge, Pa., B7.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, I4; Newark, N. J., D2; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5; Reading, Pa., C2; Bridgeport, Conn., N8.

Structural: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Ambridge, Pa., B7; Baltimore, E1; Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., J2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Ambridge, Pa., B7; Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensboro, Ky., G5; Bridgeport, Conn., N8; Reading, Pa., C2.

(Effective June 15, 1959)

INDUSTRIAL AND ORNAMENTAL PERFORATED METALS

DESIGNED AND PRODUCED
FOR EVERY PURPOSE

Steel, brass, copper, monel, bronze, aluminum, zinc, tinplate, lead, stainless steel, coated metals, bonded materials, plastics and paper punched as required and for all kinds of screens.

We can guarantee sheets that are perfectly flat, straight, parallel on sides, and free from buckle or camber.

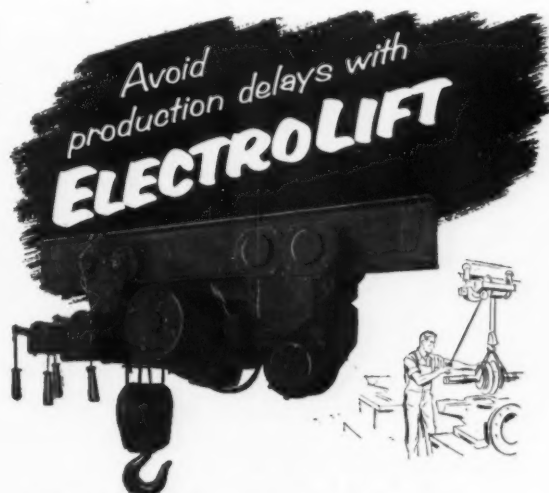
A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may demand.

Metallurgical and design assistance.

89 years of experience.
Large enough for big jobs,
small enough for personal at-
tention.

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PERFORATING SPECIALISTS OF ALL TYPES OF MATERIALS



Insist on the superior hoist performance and maximum reliability that ElectroLift worm-drive hoists can give you. Capacities from 1/4 to 10 tons . . . minimum headroom required . . . superior braking . . . simple, rugged, and made with the best components and materials. Consult your local ElectroLift representative, or write for a complete catalog.

ELECTROLIFT
WORM DRIVE
HOISTS

5843

204 Sargeant Ave.,

Clifton, N. J.

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott Enc. F.V.		475	320
1	3000	New Whse. Enc. F.V.		525	600
1	2250	New Elliott Enc. F.V.		600	200/300
1	2200	G.E. MCF		600	400/500
1	1750	New Elliott Enc. F.V.		250	175/350
8	1500	New Whse. Enc. F.V.		525	600
1	1300	G.E. MCF-12		300	200/100
1	1200	G.E. MCF		600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	940	S.S. Enc. F.V.		800	800/1000
2	800	G.E. MCF		250	400/750
2	765	Allis Ch. MHC		550	1012/1350
2	750	G.E. MCF		600	450/900
1	750	G.E. M.F.		600	120/360
4	600	Whse.		250	275/550
1	500	G.E. MPC-10		250	188/400
1	450	Whse.		550	415
2	400	G.E. CY-275		300	1000/1500
2	325	Allis Ch. MHC		550	450/900
1	300	Cr. Wh. H-102 B.B.		230	1200
1	200	Rel. B.B. T-664-D.P.		240	850
1	200	Whse. CB-207-4		250	850/1200
1	150	Cr. Wh. CMC-65H		230	1150
1	150	G.E.B.B. TLC-74		250	1150/2500
1	150	G.E.B.B. CD		600	250/750
2	150	G.E. CDP-125, B.B.		250	1750

1	150	A.C. E.V.B.B.		250	450/1200
1	120	G.E.B.B. TLC-50		250	1950/5000
1	120	Rel. B.B. 1050T		230	575/900
2	125	Whse. SK-190		230	450/1200
1	125	Whse. SK-185		230	450/1500
1	100	G.E. CDP-145		230	1750
1	80	Whse. SK-123.9		240	2000/1500
1	75	G.E.B.B. CD-1235-D.P.		600	850
1	60/75	Rel. B.B. T-664-D.P.		250	300/1200
1	30/40	Whse. B.B. SK-131, TEFC		250	500/1500
1	25/33	Rel. B.B. TY-565		240	300/1200
1	40	Rel. B.B. 3852 TEFC		250	1500
1	30/40	Rel. B.B. T-564-D.P.		240	300/900

MERCURY ARC RECTIFIERS

3-150 KW. G.E. Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.

2-150 KW. G.E. Ignitron, 245 V. D.C.—230 V. A.C., air cooler transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	Cr. Wh. 1 unit	720	100	2300
1	500	G.E.	900	125/250	410
1	350	G.E.	900	125	410/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	250	G.E.	900	600	440/2300
1	240	Whse.	900	125	220/440
1	200	Whse.	1200	550	2300
1	200	El. Mhy	1200	250	2300/4600
1	150	G.E.	1200	250	2300
1	150	Whse.	1200	250	2300
1	150	G.E.	1200	125	410
1	140	Cr. Wh.	690	125/250	2300
1	100	G.E.	1170	250	220/440
2	100	Cr. Wh.	1160	525	220/550
1	100	G.E.	1200	250	2400/4100
2	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	CISC	1	13800 x 2300
3	1000	G.E.	CA/FA	1	13800 x 250/460
3	853	A.C.	OISC	1	4800 x 480
1	750	Wagner	JPC-16	3	13200 x 480
2	750	G.E.	Pyranol	1	4800x85/55-255/165
3	500	Kuhl	OISC	1	12200 x 6500
6	333	G.E.	HS	1	7200/12470YX 2400/4160Y
3	333	G.E.	OISC	3	2400/4160YX600
3	150	G.E.	OISC	1	3300x2300/4000Y
3	100	G.E.	HS	1	4800/8520Y x 120/240

CRANE & MILL MOTORS 230 V., D. C.

Qu.	H.P.	Make	RPM	Type
12	12/14	Whse.	700/600	MCA-30, Series
1	50	Whse.	975	K-5 Series
2	23	G.E.	650	MDS-408
1	25	G.E.	725	CO-1808, Series
1	35	Whse.	460	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 S.B. R.F.
1	45	Whse.	600	CK-9 Comp. S.B.
3	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AEB.B.
1	50	Cr. Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 S.B.
6	100/140	Whse.	500/415	MC-90 R.B.

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BELYEA COMPANY, INC.

47 Howell St. Jersey City 6, N. J.
Tel. Oldfield 3-3334

THE CLEARING HOUSE

Detroit Showing Signs of a Pickup

Used equipment business in auto center revives after May lull.

Production equipment inquiries are being translated into sales. Competition is keen.

■ There are signs of life in the market place. May sales dipped after a strong April showing and for a brief moment dealers thought that the summer lull was setting in a little early. But inquiries picked up early this month, and June has a good potential.

Many Detroit dealers do much of their business outside Michigan. In some cases the traditional volume goes as high as 50 pct. So the local market is getting an increase in business from outside.

Market Competitive—Part of the reason is, of course, that Detroit is the heart of the nation's metalworking area. There is a large volume of equipment available. Currently, availability and the competitive nature of the local market tends to put a cap on prices.

Few prices have risen in recent months despite improved sales. While prices have shown a tendency to firm, dealers are willing to dicker. Compared with used machinery prices in most metalworking areas, Detroit's are among the lowest. This fact is helping to attract buyers.

Good Selection — Dealers are maintaining inventories at fairly high levels and continually adding to them in order to widen the available selection.

Toolroom equipment is in demand, especially lathes, mills and shapers. But every so often spot shortages are developing. As one dealer points out: "If you can't find it around here at a good price, chances are it's going to be hard to find anywhere else and the price is bound to be higher."

Sales Pickup—Production equipment, which has trailed in sales for quite a while, is beginning to perk up, according to dealers specializing in these lines. Inquiries for lathes, grinders, drills and broaches are being translated into sales.

But special production items, such as automatic drilling or boring equipment are still on the dead side. Some pretty good bargains are available in these items—if they can be reworked to handle another job, and a lot of them can be.



"We just finished testing that motor you designed."

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS

19' x 10 Ga. Bertach No. 6 Initial Type
20' x 10 Niles Pyramid Type
32' x 10 BALDWIN PYRAMID TYPE—Late

BORING MILL—VERTICAL

63" King Heavy Duty Two Ball Heads, One Side Head, 4 Chuck Jaws, 30 H.P. Main Drive Motor

BRAKE—BOX & PAN

8' x 1/4" Drels & Krump, 12" Finger Extension

BRAKES—PRESS TYPE

90 ton Niagara Model 90-8-10
8' x 3/16" Warco

18' x 10 Ga. Clearing

CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H 40' Span 220 Volt D.C.
5 ton P&H 57' Span 220/3/60 A.C.
8 ton P&H 55' Span 220/3/60
10 ton P&H 39' Span 230 Volt D.C.
10 ton Milwaukee 57' Span 230 Volt D.C.
10 ton Shaw 48' Span 230 Volt D.C.
10 ton Walting 75' Span 220/3/60 A.C.
10 ton Shaw 120' Span 230 Volt D.C.
30 ton Shaw 70' Span 230 Volt D.C.
120 ton Niles 87' Span 230 Volt D.C.
120 ton Shepard Niles 77' Span 220/3/60 A.C.

DRAW BENCHES

7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

FORGING MACHINES

1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM

FORGING 800 lb. to 12,000 lb. Incl.

HEADERS

#250C Manville Single Stroke Solid Die
#44 Waterbury Farrel Dble Str Open Die

LATHES

Model 220M Monarch Geared Head, 34 1/2" Swing
45" between Centers
34" x 23' Monarch Engine Lathe

LEVELERS—ROLLERS

24" Torrington, 9 Rolls 8" Dia.
66" Guide 17 Rolls 4 1/2" Dia.
72 Leveler 17 Rolls 3 1/2" Backed Up

NIBBLER

Pullmax Model 2, Capacity 11/32"

PRESSES—HYDRAULIC

300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton Watson Stillman Piercing Press, 48" x 72"
600 ton Birdsboro, Platen 48 x 48", Stroke 15"
1000 ton Southwark Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68 x 68", Stroke 40"

PRESS—KNUCKLE JOINT

800 ton Cleveland Model 8-K, 6" Stroke

PUNCH & SHEAR COMBINATIONS

2 1/2" Buffalo Ironworker
28 Kling, 36" Throat Capacity 1 1/4" x 1"
Rock River Double End, 28" Throat Capy. 1 1/4" x 1"

RIVETERS

150 ton Southwark Hydr., 125" Throat
275 ton R. D. Wood Hydr., 18 1/8" Throat

ROLLING MILLS

3 1/2" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
20" x 36" Single Stand Two High
24" x 60" Single Stand Two High
12" x 32" Birdsboro 3-Hi Bar Mill
22" x 40" Lewis 3-Hi Sheet Mill
21" x 52" Three Stand 4-High
ROLLS—FORMING
M2 1/2 Yoder 6 Stand, Max Width 15"
18 Stand Custom Built, 2 1/2" Shaft, with take 36" wide

ROLLS—PLATE STRAIGHTENING

72" McKay 9 Rolls 13" Dia. Backed-up
92" Hilles & Jones, 6 Rolls 10" Dia.

SAW

Model 122-BA Ty-Sa-Man, Capacity 8 Cuts 2" Deep
one time 15" wide, 18 ft. long

SCALPING OR BILLET PEELING MACHINE

Medart #6 Size HFEP, Capacity 3 1/2" to 5" Incl.

SHEAR—GATE

10' x 1" Cincinnati Model 10010

SHEARS—SQUARING

6' x 3/16" Stamco

18' x 3/16" Version Model E-18

SHEARS, MISC.

36" Hallden Drum Type, Capy. 33-38 Ga.
60" x 10 Ga. Cut-off Line

SHEAR—ROTARY

No. 23A Quickwork Whiting 3/16" Capacity

SHEARS—SQUARING

6' x 14 Ga. Edwards, Motor Drive—LATE

10' x 10 Ga. Wyson & Miles

12' x 3/16" Cincinnati #1412

SLITTERS

24" Torrington Slitting Line, 3 1/4" Arbor
36" Waterbury Farrel Slitting Line, 4 1/4" Arbor

84" Slitting Line, Arbor Dia. 7"

STRAIGHTENER

Torrington #1734 12-Roll, Capy. 1 1/4", Rd. 1-9/16"

TESTING MACHINES

20,000 lb. Baldwin Univ. Hydraulic

50,000 lb. Olson 3-Server Beam Type Universal

60,000 lb. Southwark-Emery Universal Hydraulic

500,000 lb. Olson, Super Deluxe Compression

WELDING POSITIONER

10,000# Ramson Model 160P

WIRE DRAWING MACHINES

Type B Morgan 4-Block Capy. 25' Rod down

Seudder 3-Block 20 Dia.

Superior T-Draft Cone Type Capy. 14 Ga. down

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STRUTHERS WELLS CORP.

MACHINE TOOLS

1—24" x 23 Ft. C.C. MONARCH ENGINE
LATHE, Serial 10474, 27 1/2" swing, 4-jaw
chuck, two carriages, taper attachments,
steadyrests, 30 HP., AC

3—NILES TIMESAYER BORING LATHES,
Serial 22279, 22300, 22301. 33" x 12"
diameter maximum depth bore, 20 1/4" maximum
work diameter, 6" maximum bar diam-
eter, spotting carriage, bar supports and
tailstock, 25 HP., AC

1—Giddings & Lewis #45 Table Type Horizontal
Boring Mill—Serial 8144, 15 HP., D.C.

1—Gisholt No. 4 Super Finishing Attachment
Model 73 with crankpin follower arm. New
1955

1—Titusville XL-250 Return Tubular Boiler, 150
P.S.I., 250 HP., complete with oil burners,
F.W. pump, trim, etc.

CRANES

1—10 Ton P&H O.E.T. CRANE, cab operated,
Serial 10422, lift 14'-11", span 39'-0 1/2", 3
motors, 230 volt DC

1—7 1/2 Ton SHAW O.E.T. CRANE, cab operated,
Serial 2416, 3 1/2 ton auxiliary hoist,
lift 34'-1", span 40'-8 1/4", 4 motors, 230
volt DC

1—5 ton SHAW O.E.T. CRANE, cab operated,
Serial 1436, lift 11'-2", span 31'-0 1/2", 3
motors, 230 volt DC

ALL THE ABOVE IN GOOD TO EXCELLENT CONDITION
MAY BE INSPECTED UNDER POWER

Write—Wire—Phone

STRUTHERS WELLS CORP.

TITUSVILLE, PENNSYLVANIA

Eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

HORIZONTAL DRILLS

2 spindle No. 410 W. F. & John Barnes, m.d.
Model 4100 W. F. & John Barnes, Horizontal Bor-
ing & Drilling Machine, m.d.

No. 410 Barnes Single Spindle Deep Hole, m.d.
No. 2 Avey Style M&L, with horizontal operation
No. 1 1/2 Bx50" Pratt & Whitney Gun Barrel Rifling
Machine, Model M1821, m.d., latest

No. 1 1/2 Bx105" Model M 1825 Pratt & Whitney
2 spindle Gun Barrel Rifling, m.d.
No. 1 Model M509 Pratt & Whitney 2 spindle
Deep Hole Drill, belted m.d.

Natco Horizontal Drill, 2 opposed B4F2 Head, 1943
34" x 40" Bausch Double Horizontal Drilling Ma-
chine, m.d.

No. 445 W. F. & John Barnes Independent 2 spindle
Deep Hole Drilling & Boring Machine, late
Model 2F1 Natco Horizontal Boring & Drilling
Machine

No. 18x50" Model 1806 Pratt & Whitney 2 spine-
dle Deep Hole

MULTIPLE SPINDLE DRILLS

2 spindle No. 6 Colburn Manufacturing Type H.D.,
separate m.d. to each spindle

3 spindle 28" Cincinnati-Bickford Upright Drill,
m.d. No. 4 M.T.
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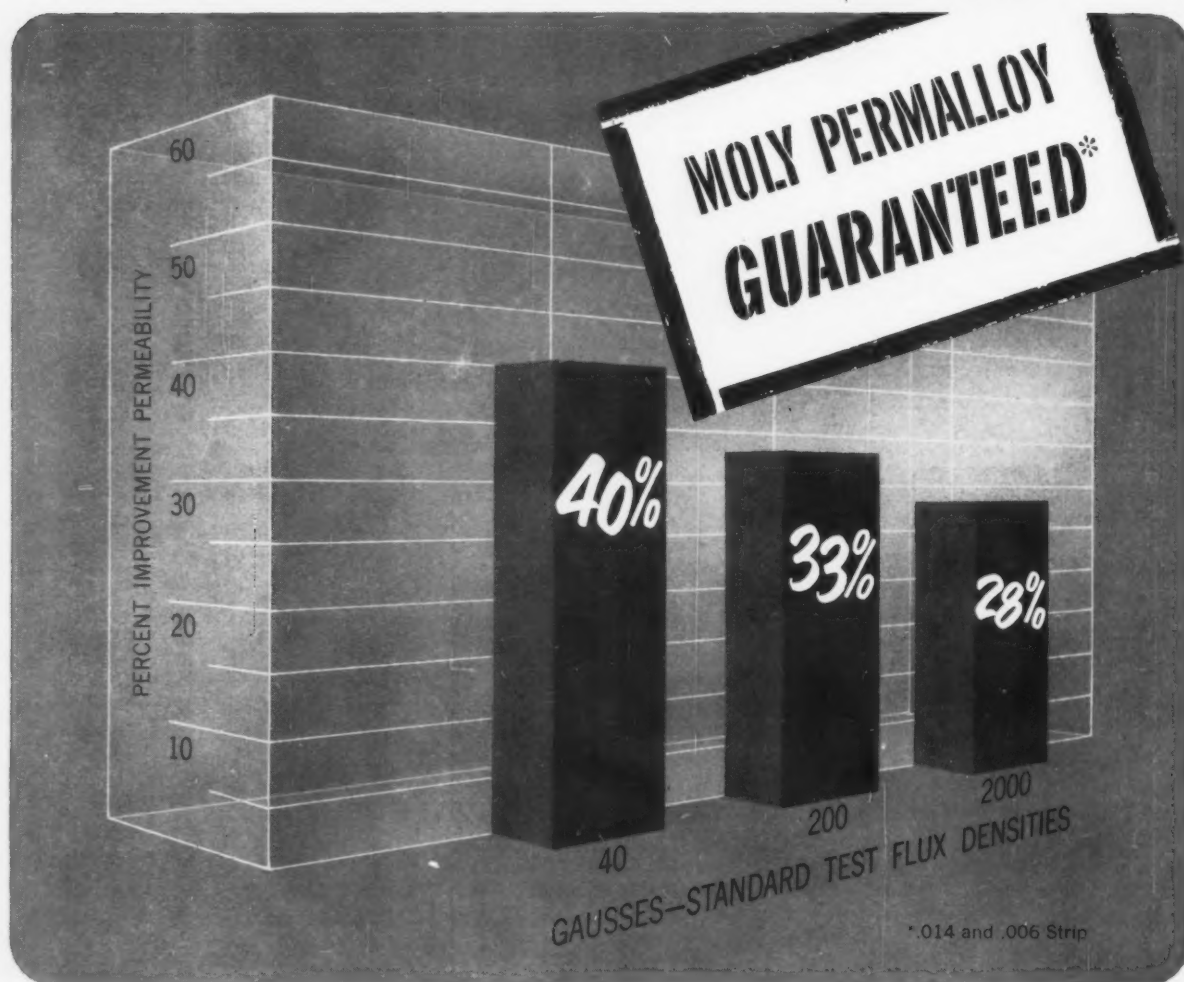
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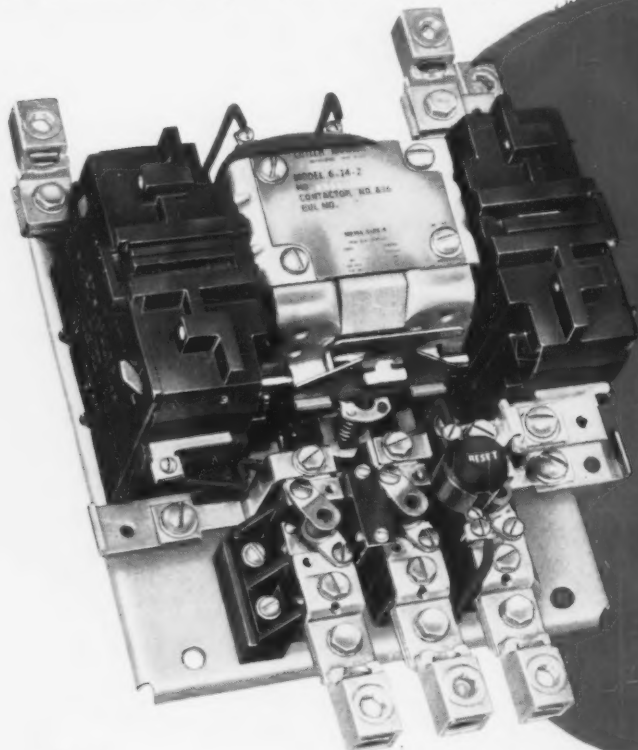
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